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ABSTRACT

Models to assess the impact of a college on the local economy are examined. A primary objective was to derive equations for which data could be obtained from normal records kept by colleges, local governments, and businesses. The models, which are designed to be used by college presidents and their staffs, are linear cash-flow formulas, including only quantitative data. A few qualitative issues are discussed, but no specific methods are suggested for handling them. The models, which include only institutional expenditures, identify who is spending, how much they are spending, what goods and services they are buying, and where the spending is being done. The models cover economic impacts on local business, government, and individuals. In addition to tracing the rationale of the economic impact models, procedures for making the calculations are suggested. Appendices provide information on: calculating expenditure proportions; the concept of the multiplier; parameters to be considered in estimating student expenditures; determining average local time and demand deposits of faculty, staff members, and students; and tax arrangements between colleges and local governments. Data on student rental and housing expenditures by geographic regions and cities are included, along with data on faculty and staff expenditures. (SW)

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JOHN CAFFREY AND HERBERT H. ISAACS

ESTIMATING THE IMPACT OF A COLLEGE OR UNIVERSITY ON THE LOCAL ECONOMY

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NOTE ON AUTHORS

Although the text of this study is the joint product of both authors, special credit should be given to Paul Stern, Coldwell, Banker & Company, Los Angeles, and Morton Marcus, University of Indiana Graduate School of Business, for the design of the basic models.

Substantial work by Herbert H. Isaacs was completed while he was president of Isaacs-Dobbs Systems.

Throughout the design and writing of the study, John Caffrey was director of the Commission on Administrative Affairs of the American Council on Education.

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FOREWORD

There was a time when many institutions of higher education were regarded as enclaves within their surrounding communities. Although the walls around campuses were less formidable than those of prisons, they symbolized a purposeful separation of the worlds of formal learning and ordinary living. Town-and-gown relationships were frequently characterized by hostility on the one side and aloofness on the other. With the growth of higher education's importance to society, this relationship in most places, fortunately, has undergone a marked change. Unfortunately, however, the mutuality of interests is still not widely understood and as fully appreciated as it ought to be.

The purpose of this publication is to provide a better basis for understanding one set of relationships between the campus and the surrounding community. It constitutes a common-sense guide for persons interested in finding out whether it costs a community more or less than it gains economically by having a college or university in its midst. The book is intended to be a how-to-do-it manual for such inquiries.

The research underlying this manual involved the analysis of facts in particular situations, but, unlike many quantitative investigations, the aim was not to yield merely facts. Instead, the objective was to set forth a systematic approach to the complex problems of identifying and tracing costs and benefits. The authors, it will be noted in their introductory remarks, point out that the methods they elaborate are *not* intended to answer many kinds of questions.

More than one reviewer of the manuscript has observed that the methodology presented is in many respects quite general, yet so flexible that it could help hospitals, museums, science centers, libraries, and other agencies examine their economic interrelations with the surrounding communities. Our hope is that this book will indeed find a useful place outside as well as inside the higher education community.

We are grateful to some of the Council's friends, and most especially to Howard Bowen, for time spent in reading late drafts of the manuscripts and in making suggestions. During the three years of work on this project, various members of the Council's Commission on Administrative Affairs gave generously of their time and advice. Particular thanks are owed Robert F. Kroepsch, William Dwyer, Francis Rourke, Victor S. Bryant, William Greenough, and Ricardo Mestres (who first suggested the study). The Council for Financial Aid to Education, and William F. Gordon, in particular, have been helpful in arranging to make the substance of this inquiry better known in the business and industrial community.

Finally, I want to add my personal appreciation to that expressed by the authors for the generous assistance of the Esso Education Foundation, which supported virtually all of the costs of the research and publication. Not only has the underwriting of the Foundation been indispensable, but also the counsel of its executive director, Frederick deW. Bolman, has been helpful.

Logan Wilson, President
American Council on Education

PREFACE

In December 1966 at a meeting of the American Council on Education's Commission on Administrative Affairs, the possibility of undertaking the study summarized here was suggested by Ricardo A. Mestres, financial vice-president and treasurer of Princeton University, then a member of the commission. The commission supported the suggestion enthusiastically.

During the following year, several research and development firms specializing in economic analysis were asked to submit proposals to design models and procedures for assessing the impact of a college or university on the economy of its community. In addition, members of the Council were asked to send to the commission examples of any such studies that they had undertaken. Late in 1967, after several proposals had been received, Frederick deW. Bolman, then associate director of the Esso Education Foundation, expressed interest in supporting the study.

In the spring of 1968, at the invitation of Dr. Bolman and of George M. Buckingham, then executive director of the Esso Education Foundation, three members of the commission attended a seminar at Esso Education Foundation headquarters in New York and discussed the various approaches and proposals which had been suggested. These three—William C. Greenough, chairman of the board, TIAA/CREF; William G. Dwyer, president, Massachusetts Board of Regional Community Colleges; and Robert H. Kroepsch, executive director, Western Interstate Commission for Higher Education—expressed their belief that the publication of suggested models for the analysis of economic impact would be of great value to the academic community. It was pointed out that data concerning the economic character of a college would be useful in the occasional struggles that occur between institutions and those persons concerned with taxes or other economic factors in the local economy, in development of plans for the expansion of a college or university, in land-use studies, and in appeals to local business and industry to support higher education.

In May 1968, the Esso Education Foundation awarded a grant to the American Council on Education to undertake the study. In July, Isaacs-Dobbs Systems, Inc.,

of Los Angeles was selected to assist the Council in achieving the objectives that had been set forth.

Early in the work, it was decided to test the emerging rationale for the collection and analysis of relevant data. Thanks to the kindness of Louis T. Benezet, then president, Claremont Graduate School and University Center, and members of his staff, we were fortunate to be able to use the six Claremont Colleges (including Claremont Men's, Claremont University Center, Harvey Mudd, Pitzer, Pomona, and Scripps) as a sample and test bed. The cooperation of the Claremont community was also of great value in the early phases.

In October 1968, members of the Council staff met in Denver with Herbert H. Isaacs, then president of Isaacs-Dobbs Systems; Paul Stern, their project director; John Caffrey; and a few members of the commission to discuss the results of the "Claremont phase." At this juncture, William Gordon, vice-president of the Council for Financial Aid to Education, indicated the interest of CFAE in the development of the models. He expressed the view that corporate support for higher education might well be favorably influenced if the economic values of colleges and universities to their communities could be objectively demonstrated. This interest was especially welcome because of the desire of the Esso Education Foundation, the commission, and the Council to ensure the widest possible dissemination of the final report outside, as well as within, the academic community. Mr. Gordon's (and CFAE's) interest was later expressed by his efforts to obtain financial support to make possible such wide dissemination.

Early in 1969, when work on the study was more than half completed, it was decided that the final package should be given a field test by an institution that had, up to that time, no connection with the study or the early field tests. Thanks to Kenneth Roose, then vice-president of the Council, we were fortunate to obtain the cooperation of Oakland University, Rochester, Michigan, through the good offices of Provost Donald O'Dowd and members of his staff. In early March, the bare bones of the models described in this book were delivered to the Oakland campus by the authors, and the dry run was begun.

Most of the early development and field work in this study was done in the Los Angeles area. The economic models were developed by Morton Marcus and Paul Stern, with the critical assistance of Marvin Hoffenberg. Linda Goffen wrote the descriptions of the models and was of invaluable aid in editing the draft materials. Ashók Davé provided research assistance in applying the models to Claremont.

Special thanks are expressed to Louis Benezet for his advice and assistance in arranging to test the models in

Claremont. Richard C. Hill, controller of the Claremont Colleges, and Sharon W. Hightower, assistant planner, City of Claremont, provided important data for the study. David E. Benor and John Chambers assisted in data collection. Finally, we wish to thank Sybil Welden for her help in retyping some of the difficult pages.

*John Caffrey
Herbert H. Isaacs*

CHAPTER ONE

ASSESSING ECONOMIC IMPACT

In many communities—rural, suburban, and urban—the presence of a college or university is a significant factor. Its impact is made in many ways beyond the obvious teaching, research, and public service functions. To the community, the college may be a source of entertainment, irritation, pride, political agitation, low-cost labor, and *revenue*. But members of the community may also be conscious of the fact that the college is a source of *expense*. It occupies tax-exempt land; children of staff and students attend public schools and use public facilities; some of its operations may compete with local business; it benefits from such tax-supported services as fire and police protection, libraries, utilities, and street maintenance.

This publication is intended to serve in two ways: as a general guide to consideration of the fair assessment of the economic impacts of an institution of higher education on its environment and as a specific guide to the undertaking of objective studies of the positive and negative effects of these impacts. This book is intended for use by colleges and universities, by civic and community groups, or by any agency concerned with the relation between higher education and the local economy.

The use of the plural *impacts* is deliberate. When this study was first planned, it was naively assumed that the result of such an assessment might be a single figure—a gain or a loss. The question that generated this study might be put as follows: Does the cost of having a college or university nearby or in the community's midst outweigh the revenue gained thereby?

As will be apparent in the chapters that follow, it was soon discovered that no single figure tells the story or answers the question. There are many kinds of economic impacts, and they cannot simply be added up to one meaningful red or black sum. Specific impacts are more important in some communities than in others. The models presented here provide for considerable flexibility in the choice of factors to be evaluated.

One outstanding feature of these procedures and models is the fact that they do not demand extensive field surveys or questionnaires. Most of the required data may be obtained from college records, from public sources, or from estimates derived from assumptions that are both explicit and flexible. In some cases, special surveys can provide exact figures and eliminate the need

to use estimates. In a few cases, a sample survey may be required to achieve a reasonable assurance of a correct estimate. For those cases, typical survey approaches are shown in the appendices.

It is important to indicate at the outset the kinds of economic or related impacts not evaluated by the models presented in this study. Most of the effects considered are current and short range. Specifically, no account is taken of such long-range effects as the upgrading of skilled and professional manpower, the contribution of scientific research to manufacturing and industry, or the drawing power of the college community as a desirable place for residence or the location of research and industrial enterprises. This drawing power can be estimated indirectly, especially in the analysis of capital development that can clearly be identified as resulting from the presence of a college or university.

In addition, no account is taken of the long-range effects on the nonlocal economy or on the lifetime income and productivity of graduates. It is difficult to estimate negative effects, e.g., a decision not to locate residences or industry in the community because of the presence of a college or university. It is also difficult to put a dollar value on many of the intangibles a college brings to the community, although chapter 6 points out the benefit of at least listing and drawing attention to some of these sources of "subjective" value.

Related Studies

Early work on this project brought to light many studies of economic impact conducted by individual institutions, some of them elaborate, others relatively simple. In some cases, outside consultants or firms were retained by the institutions to undertake these studies. In other cases, the college or a joint committee of citizens undertook simple studies or estimates featuring such attention-getting facts as the number of gallons of ice cream or of eggs or of other items purchased from local vendors.

The present study differs in several respects from any of those that have been brought to our attention:

1. It takes account of a wider variety of factors and effects.
2. It includes estimates of negative factors. (Most institutional studies understandably accentuate the positive.)

3. It makes all estimates and assumptions in such explicit terms that, though one may question them, there is no doubt about the method employed. (If other estimating factors can be justified in a particular case, they may easily be substituted.)
4. Finally, local studies based on the models presented in this book may more justifiably be compared, at least to the extent that the same kinds of facts and methods are used. (No two reviewed studies followed the same procedures.)

Use of This Book

Those who are already convinced or aware of the need for an assessment of the economic impacts of their college or university on its environment will be most interested in the how-to-do-it sections of this book. Once it has been decided to undertake such a study of a particular institution and its community, the major tasks to be undertaken are the following:

1. Assign specific responsibility for the study to an investigator (team or individual) and establish an advisory committee.
2. Decide in very specific terms, preferably by outlining them on an area map, the precise boundaries of the environment to be studied.
3. Decide which of the models are appropriate for the institution and the community.
4. List the data needed for each model, the known or probable source of each datum, and a schedule for obtaining each.
5. Insert the data called for in the models (equations), perhaps using worksheets, and perform the required computations.
6. Interpret and present the results to the college and to the community.

At first glance the models displayed in chapter 4 may seem forbidding, but patience and careful attention to details and definitions of terms will soon reveal that every step is fully explained and that sources for obtaining the required information are suggested. Although the models might be programmed for a computer, especially if such a study is to be repeated periodically, they do not have to be. All computations are feasible on a desk-top calculator.

Professional economists may well question the simplicity of the approach recommended, and they are entitled to do so. Neither the authors nor the American Council on Education make any claim to theoretical purity or completeness in the methods proposed. They are intended only to provide explicit, reasonable, straightforward procedures for estimating the more direct economic impacts of an institution of higher education on its neighboring community. If anything, these procedures tend to underestimate the positive effects.

In addition to the numbers that may result from the use of these procedures, there is a basic value in simply

drawing attention to some of the factors and sums taken into account—many of which are often overlooked by citizens of the community or by the college or university itself. The process of the study may well be more valuable than its final numerical results.

As was pointed out above, many studies reviewed in preparation of this guide concentrated on the positive factors only, e.g., on what the college and its students and staff spend in the local community. In the procedure proposed here, the other side of the picture is also clearly drawn. The value of this approach lies not only in its fairness and honesty but also in the credibility of the final results. A college on the defensive may say, Look at all the money we spend or bring into this community. A critic of the college may well answer, Yes, but look at what you cost us—at what we lose. Those who follow the procedures suggested here are in a good position to counter, We know. We have taken those factors into account, and here are the results.

The composition of the group or team undertaking the study or serving on an advisory committee is best left to the judgment of those originating the study. However, it is suggested that the involvement of a few key members of the local civic and business community may be of great value. Such involvement may make it easier to obtain the necessary data, may add to the credibility of the resulting estimates, and may incidentally improve communication and rapport among those involved.

Use by Other Institutions

Although the primary intent of this guide is to assist a college or university in conducting the kind of study outlined, it is possible that other kinds of public, quasi-public, or private tax-exempt institutions may find the approach relevant and helpful. Among such institutions one might list hospitals, research and development centers, major laboratories, and large state or federal installations.

Feedback Communications

This guide, as far as is known, is the first of its kind. Although the models and procedures suggested are based on careful study, sound reasoning, and limited field trials, it is very likely that certain factors may have been overlooked or incorrectly related to other factors. It should be emphasized that this guide's approach is experimental and that a revised edition may be issued at some future date.

Both the authors and the publisher, therefore, will appreciate receiving feedback communications from those who try these suggested procedures. Such communications might include examples of final reports, complaints about points that are not clear, information concerning difficulties encountered or useful data sources, anecdotes about the impacts of the studies themselves, and any suggestions for the improvement of the models or of their presentation in this volume.

CHAPTER TWO

GENERAL APPROACH

As indicated in chapter 1, the need for this book is illustrated by the numerous studies conducted to estimate the economic impacts of colleges and universities on their environments. These studies are usually designed as unique research projects to meet ad hoc local needs. Those making such studies must be familiar with the community; must define the economic factors to be considered and describe the kinds of data needed to calculate their magnitudes; must design data collection techniques suitable for the local situation; must select appropriate statistical techniques for analyzing the data; must invent methods to assure the most effective display of the results to the intended audiences; and, finally, must do the work.

Such research planning is not only technically difficult but also time consuming and hence expensive. The study team must reflect many disciplines, e.g., economics, statistics, system analysis, accounting, sociology, and political science. The full range of such skills may not be available within the faculty and staff of the institution, and the services of an outside consultant are often solicited to help design the study or even to conduct it. The cost of this assistance frequently discourages institutions from proceeding, and, unfortunately, those institutions with the most pressing need for economic impact studies may defer them because of anticipated costs.

This book presents a generalized approach designed to enable almost any institution to conduct a useful economic impact study for itself with a reasonable investment of resources. With the guidance provided, a team recruited from among administrators, faculty, students, and community residents should be able to do the work. This guidance includes recommendations for the definition of the environment to be studied, a description of the economic impacts that are generally important, straightforward equations for calculating their values, simple basic sources for the required data, and suggestions for assembling and presenting the results. Participation of key persons from the administration should assure proper direction and coordination. Faculty members can bring technical direction and conceptual balance to the project. Advanced undergraduate or graduate students make excellent research assistants for gathering data, doing calculations, and preparing drafts of results. Community resi-

dents will often be the best—or sole—source of many kinds of information.

Development of the Guide

The study's basic framework emerged from a combination of interviews, reading, and field studies. More than three dozen written studies were examined for their objectives, the economic parameters being measured, sources of data and collection methods, mathematical and statistical techniques, and presentation of results. Field interviews were conducted with college administrators and civic leaders. The roster of economic impacts identified in prior studies was expanded to include concerns expressed to interviewers by these leaders and by those familiar with relevant economic theory. The resulting roster of calculable impacts turned out to be substantially longer than that found in any single study then at hand.

One perception gained during the research was that in most studies an inordinate proportion of the total effort was devoted to data collection and manipulation. Analysis indicated that the mere act of procuring great quantities of data did not assure a high degree of accuracy in the results. The way in which questions are asked, the care with which they are answered, and the manner in which the responses are assembled, weighted, and interpreted all introduce progressive levels of variability into the conclusions drawn. Furthermore, those sponsoring most economic impact studies were concerned with *orders of magnitude* of the various impacts rather than with exact values.

It was decided, therefore, that a primary objective should be to derive equations for which data could be obtained from the normal records kept by colleges, local governments, and businesses; from statistical publications of the federal government; and from the appendices of this document. Wherever possible, alternative equations were derived and their required data compared with other methods of calculation. In each case, the best balanced combination of accuracy and ease of data acquisition was attempted. In a few instances it will be necessary or preferable to obtain data through a sample survey. In those cases, a sample questionnaire and suggestions for its use are provided.

Capabilities and Limitations of the Models

The models in chapter 4 are designed to be used by a college president, or a member of his staff, for determining the magnitude of the economic impact of a college upon its environment in a given time period. An understanding of the capabilities and limitations of these models is fundamental to their effective use.

The models should not be expected to reflect a comprehensive, in-depth picture of all possible economic relationships between a college and a community. Such an objective would be unrealistic in view of the limited scope of this study. Nor are the models intended to be sophisticated, complex analytic tools. Their virtues lie rather in their ease of use, in their modularity, and in the confidence with which the user may make general conclusions from the results.

The models are simply linear cash-flow formulas, including only what can be readily counted or added and omitting qualitative issues. For example, the models do not deal with the college's effect on the quality of life in the community. They do not take into account the tempo of economic activity, the economic calendar, or economic stability. In chapter 6, a few qualitative issues are discussed, but no specific methods are suggested for handling them.

The models include only institutional expenditures, not revenues. Amounts and sources of revenue are readily known; it is not so easy to identify expenditures or to trace patterns of spending in a community. The models impose an arbitrary structure on cash outflow to identify *who* is spending, *how much* they are spending, *what* goods and services they are buying, and *where* the spending is being done.

The models are limited to use in estimation of short-term economic impact. They are not concerned with the ultimate economic impact of the college upon the community, and they do not embody considerations such as what a community might have been like without the

college. Applicable policy questions might be, for example, whether to expand college services, whether to rent or buy property, whether to exchange a land holding.

In considering such policy questions, predictive models are valuable. The models presented here provide a means for evaluating a situation in a short time span and in their present form cannot be used for long-term prediction unless the user assumes that any future changes in value would leave the functional relationships among the variables unchanged.

The suggested models are inexpensive to use, and, once the data sources have been identified and the methods mastered, it should be feasible to repeat the estimates periodically, as needed.

Finally, and perhaps most important, the models provide a built-in understatement; i.e., the actual economic impacts are probably greater than the models suggest. For example, one might ask, Since the college runs certain kinds of businesses (dormitories, cafeterias, etc.) that deprive some local businesses of specific markets, what proportion of money spent there would otherwise have been spent in the community? No sound answer to that question exists. We know only that some money is indeed being lost to the community as a result of certain college business enterprises. However, these models assume that *all* monies spent in the college businesses are lost to the community. It seems better to err on the side of too little than too much, particularly when a public relations function is being served and it is impractical to account for all the real expenditures of every individual and group associated with the college.

In summary, the models are simple, credible devices for estimating cash flow. They do not show political, social, or aesthetic impacts or the effects upon the community of the college's human resources. They are, however, flexible and comprehensive in the measurement of dollar outlay, and they provide simple indicators for planning.

CHAPTER THREE

EVOLUTION OF THE MODELS

The creation of these models began with a review of economic impact studies conducted by several American colleges and universities. All of those studies tended to concentrate on estimation of the aggregate demand in the community resulting from expenditures by the institution itself and by persons associated with it. Four spenders were identified:

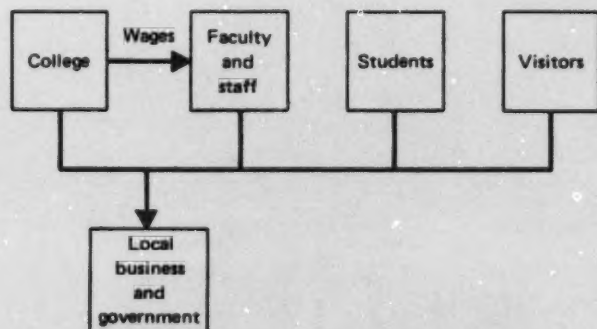
1. The college as a corporation
2. Faculty and staff as private individuals
3. Students as private individuals
4. Visitors as private individuals

Figure 1 shows a simple model of the money flows from the four groups to major sectors in the community. An indirect flow to the community results from the payment of wages by the institution to its faculty and staff, a portion of which ultimately is spent locally.

For the college or university, expenditures data typically were obtained from officers of the institution. Faculty, staff, student, and visitor data were derived from questionnaires asking for estimates of expenditures made in a recent period, such as a semester or school year.

More sophisticated studies attempt to add these three refinements to the simple flow shown in figure 1:

FIG. 1. A simple expenditure model



The reader interested primarily in proceeding with an economic impact study can comfortably skip this chapter. However, the assumptions explained in it must ultimately be understood by those responsible for interpreting the final results of the study.

1. The portion of total payments made to local businesses and governments, and the portion made elsewhere
2. The portion of total expenditures for secondary goods and services made locally by community businesses and governments and the portion made elsewhere
3. The increase in local aggregate demand resulting from the multiplier¹ effect of the initial local expenditures

Figure 2 shows the effect obtained by adding these three factors to the simple model. In figure 2 direct money payments are made by the four spending groups to firms and governments both in the local area and in other areas. A "leakage" occurs because the local firms purchase secondary goods and services for resale from firms in other areas. The return flow from other areas to the local area is generally assumed to be of insignificant magnitude. Finally, there are income-induced multiplier effects in the local economy because local agencies purchase local goods and services for resale.

Whereas interviews and questionnaires can reveal the effects of initial expenditures with reasonable accuracy, indirect and income-induced effects can only be presumed to follow patterns similar to those existing in communities in which detailed economic studies have been made.

Except as they identify expenditures made by visitors, few studies indicate the portion of college-related expenditures that represent an inflow of funds to the community. In some cases, recognition is given to the loss of purchasing power in the community that would occur if resident students were to attend college in other cities.

The studies undertaken by individual schools, while similar in conception and methodology, lack real comparability in both methodology and economic considerations. Consequently, they do not serve as practical or reliable guides for other communities. As an example of local differences, table 1 presents details from studies of student expenditures at five colleges.

Although the five studies cited show some concern

1. The economic concept of the multiplier is discussed in appendix B.

with similar items, no two account for exactly the same categories. The differences in the numbers may reveal true differences in circumstance—or differences in methodology. For example, do students at Miami really spend more than twice what students at Duke spend on recreation? Or are different kinds of items counted locally? Do students at Winona really spend more than three times what students at Duke spend on food and beverages?

The difficulty of answering such questions—and hence of comparing one study with another, between communities or over time—cannot be entirely overcome by using the methods set forth in the present study, but the importance of explicit definitions and procedures is obvious. It is also clear that comparisons among studies made in different kinds of communities must be affected by concern with such differences as size, region, urban-rural

FIG. 2. A two-area expenditure model

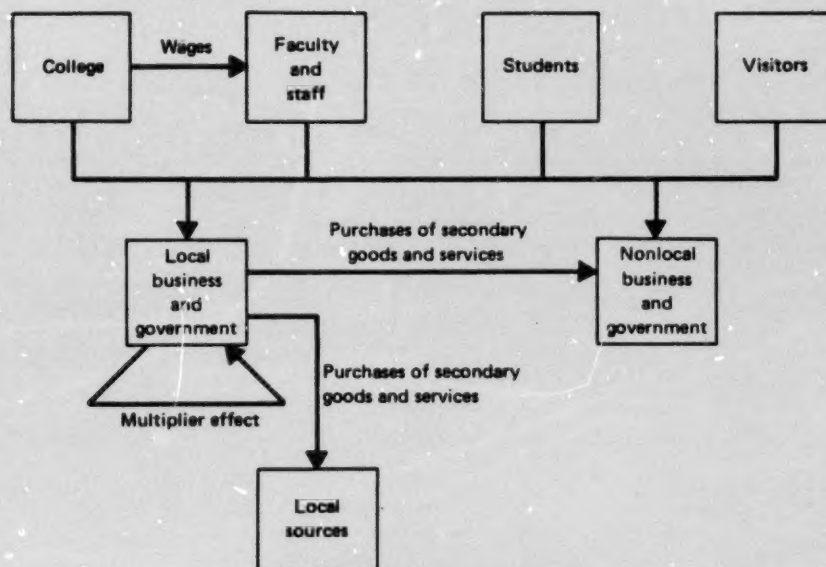


TABLE 1

Percentages of student expenditures by object at five colleges

	DUKE	U. OF MIAMI	RUTGERS	TULANE	WINONA
Food, beverages	13.7	31.6	29.6	22.4	42.2
Clothing	13.0	5.5	10.1	9.3	17.7
Laundry, dry cleaning	2.6	3.8	2.4	4.5	3.1
Recreation	6.5	12.6	7.8	7.1	10.1
Housing, excluding college housing	6.1	11.9	5.5	23.7	.....
Utilities	2.5	2.3	1.7	7.6	2.0
Transportation	9.8	15.8	7.3	7.8	12.5
Personal services	6.5 ^a	3.1	4.5	.....	3.0
Health	.....	1.0	3.3	5.6	.....
Insurance, other than car	.....	2.4	4.5 ^b	1.4	.....
Taxes	.....	.....	1.7	.....	.....
Educational expenses	8.4	.....	12.7	.....	.....
Miscellaneous	30.9	10.0	8.9	10.6	9.4

^aIncludes health^bIncludes car

balance, the proportion of resident students, etc.

A complete study of the economic impact of the college upon the community should take into account the services offered by the college to its students, faculty and staff, visitors, and members of the community at large. These are competitive with market- or government-supplied services and are part of the true economic relationship that exists between the college and its community. Reference is often made to services, such as police protection, street maintenance, and sanitation, that are wholly or partly self-provided in an effort to relieve local taxpayers of the burden of serving the campus. Seldom does the college emphasize the many commercial services provided by the institution for its students and personnel with consequent reductions in business opportunities for local investors. These omissions tend to create credibility questions about college-sponsored economic impact studies.

None of the studies reviewed recognized the burden added to the local public school population by college families. Since academic institutions are traditionally labor intensive, it is conceivable that the increase in public school costs would exceed the tax revenues received from parents resident in the affected school districts because of college employment.² An economic impact study should

2. For a generalized discussion of this issue without specific references to colleges, see W.Z. Hirsch, "Fiscal Impact of Industrialization on Local Schools," *Review of Economics and Statistics*, May 1964.

include this factor so that the college is prepared if this issue is raised.

The simple expenditure models previously available do not include all the facts required to fully assess a situation. Simple expenditure studies tend to be one sided. They do not account for the conditions imposed upon the community by the local presence of an academic institution. Nor, on the other hand, do they include the wide range of positive factors. These studies typically deal only with short-term money-flow relationships, ignoring the longer range considerations that are difficult to identify and, even when they can be identified, still more difficult to quantify.

Figure 3 represents a more rounded view of the economic relationship between the college and the community. In figure 3, not only the expenditures of college-related persons but also the payments to the college for the services it renders to all sectors of the local economy are considered. These latter values are really understated, since many services offered by the college, such as concerts, lectures, and voluntary student tutorial services, are free or given at or below cost.

The ideas in figure 3 can be displayed as a transactions table; in table 2, cash flows from the units listed at the left to the units shown across the top. Intrasector transactions are not shown.

The specific cash-flow relationships imply economic impacts for related capital facilities. The fact that there are physical assets associated with the college is reflected

FIG. 3. An extended cash-flow model

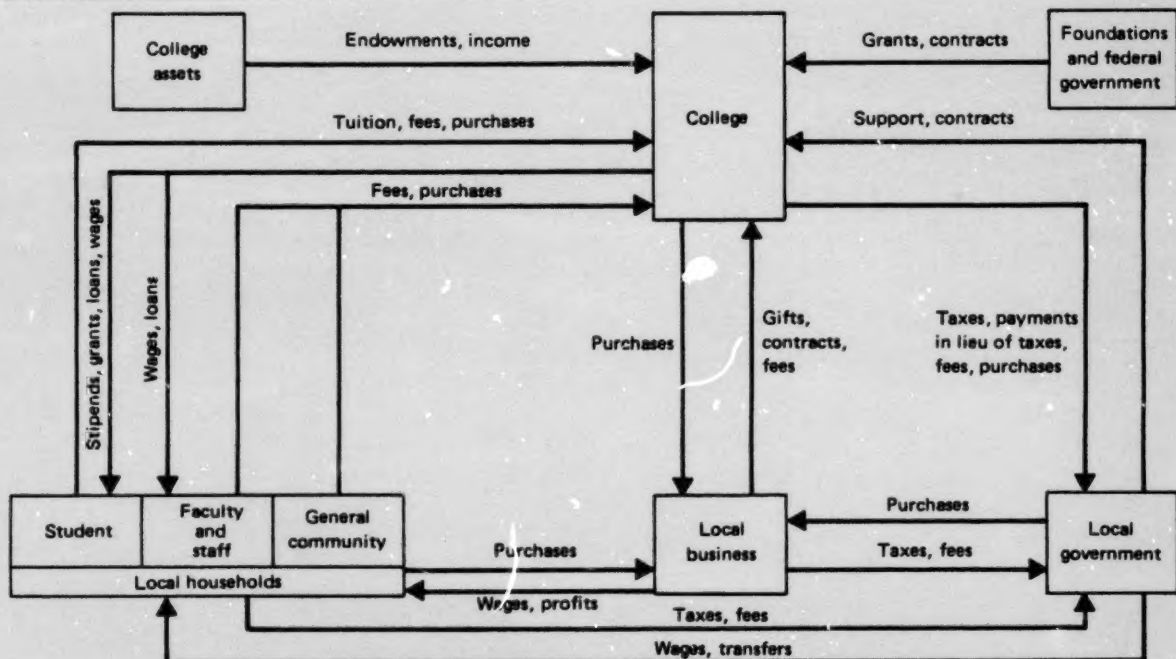


TABLE 2

An extended cash-flow or transactions table

FROM \ TO	COLLEGE	BUSINESS	GOVERNMENT	HOUSEHOLDS		
				Student	Faculty, staff	General community
College		Purchases	Taxes, in-lieu, fees, purchases	Stipends, grants, loans, wages	Wages, loans	
Business	Gifts, contracts, fees, endowments, income		Taxes, fees	Wages, profits	Wages, profits	Wages, profits
Government	Support, contracts	Purchases		Wages, transfers	Wages, transfers	Wages, transfers
Households:						
Student	Tuition, fees, purchases	Purchases	Taxes, fees			
Faculty, staff	Fees, purchases	Purchases	Taxes, fees			
General community	Fees, purchases	Purchases	Taxes, fees			

in the level of investment of the economic community. The college facilities must be operated, maintained, and protected. This necessity fosters local business investments in facilities and inventories and local government investments in fire and police protection, sanitation, transportation, public works, and similar services.

Student physical assets consist primarily of automobiles. Like college assets, automobiles affect the level of investment by local business and government dealing in operation, maintenance, and protection. The number of cars in operation also influences business and government decisions regarding investments in parking, streets, and police facilities.

In addition to cars, faculty and staff physical assets commonly include real estate and major appliances. Their operation, maintenance, and protection have much the same effects on local utilities, businesses, and governments as do the college assets described above. Though the assets themselves are of a somewhat different compo-

sition, faculty and staff additions to assets have an impact similar to that of the college. Moreover, the impact of the faculty and staff activity is more likely to be predominantly local than is that of the college.

Increases in the college's physical assets induce the community to make additional investments. Certain changes may occur as well, induced by the economies and sophistications of scale. The magnitude of future grants receivable also serves as an incentive for local business and government to maintain or increase their levels of capital investment, and additional investments in the local economy create a demand for more loanable funds. These factors, however, are more easily pointed out than measured. Logic suggests that all such influences are positive and beneficial, but a study of such subtle and complex effects—deliberately excluded from the procedures suggested in the present volume—would go far beyond the stated intentions of straightforward and credible assessment of more obvious economic effects.

CHAPTER FOUR

DESCRIPTION OF THE MODELS

In defining the economic impacts of an institution on its environment, one of the major considerations is the definition of the environments with which one should be concerned. One could define a wide variety of such environments. A college or university could conceivably have an impact on a foreign government or a regional area, and many institutions certainly have an impact on nonlocal communities when their students go to those locations or when graduates return to exert significant influence in their home communities. The impacts of major concern to most institutions, however, are those on the immediate local environments—the businesses in the local communities, the local governments, and the individuals who reside in those local communities. These are the environments with which this study is concerned.

The geographic extent of the environment selected for study is an important decision for the project team. Numerous overlapping jurisdictions will complicate the data problems in metropolitan areas. When an environment smaller than a recognized political entity is selected—for example, part of a city or county—data for the larger unit may have to be used with partially subjective modifications.

Figure 4 schematically represents the three major environments and the model groups that provide a measure of the institution's economic impacts on those environments. By *model* we mean an ordered statement of relationships among variables. There are two types of models, the *definition* and the *functional relationship*. An example of the former would be $Y = C + I$, or income = consumption + investment. An example of the latter would be $C = a + bY$, or consumption is a linear function of income.

The nomenclature for the models is designed to provide a consistent numbering framework to assist the user in relating the various models and submodels. The business, government, and individual models are labeled B, G, and I, respectively. Tables 3 through 5 summarize the major components of these models, and detailed discussions of them follow.

The scheme for numbering the models may be seen in table 3. In the business models, there are four major model groups labeled B-1 through B-4. As noted, the

results of these models may not be added together. These models in turn are further broken down into submodels, as shown in the table. Chapter 5 includes descriptions of both the data sources for calculating the most detailed models and the way in which data are aggregated to provide the results at the highest level of summation.

The remainder of this chapter describes each model in terms of its components and their relationship to one another. The presentations include a general description of each model, followed by the specific equation to be utilized in the calculations. Rather than focusing on each component, the reader should attempt to keep in mind the major models and to observe how the components are integrated.

The notation scheme used in the models represents amounts with capital letters, coefficients (fractional multipliers) with lower-case letters, and indexes with mnemonics. See, for example, model B-1.2:

$$(P_{LB})_{CR} = (m_p)(E_L)_{CR}$$

P = purchases

LB = local business

CR = college-related

E = expenditures

L = local

m_p = fractional multiplier (proportion) of local purchases, p , by local business

It is understood that the two right-hand terms are to be multiplied, as in algebraic notation.

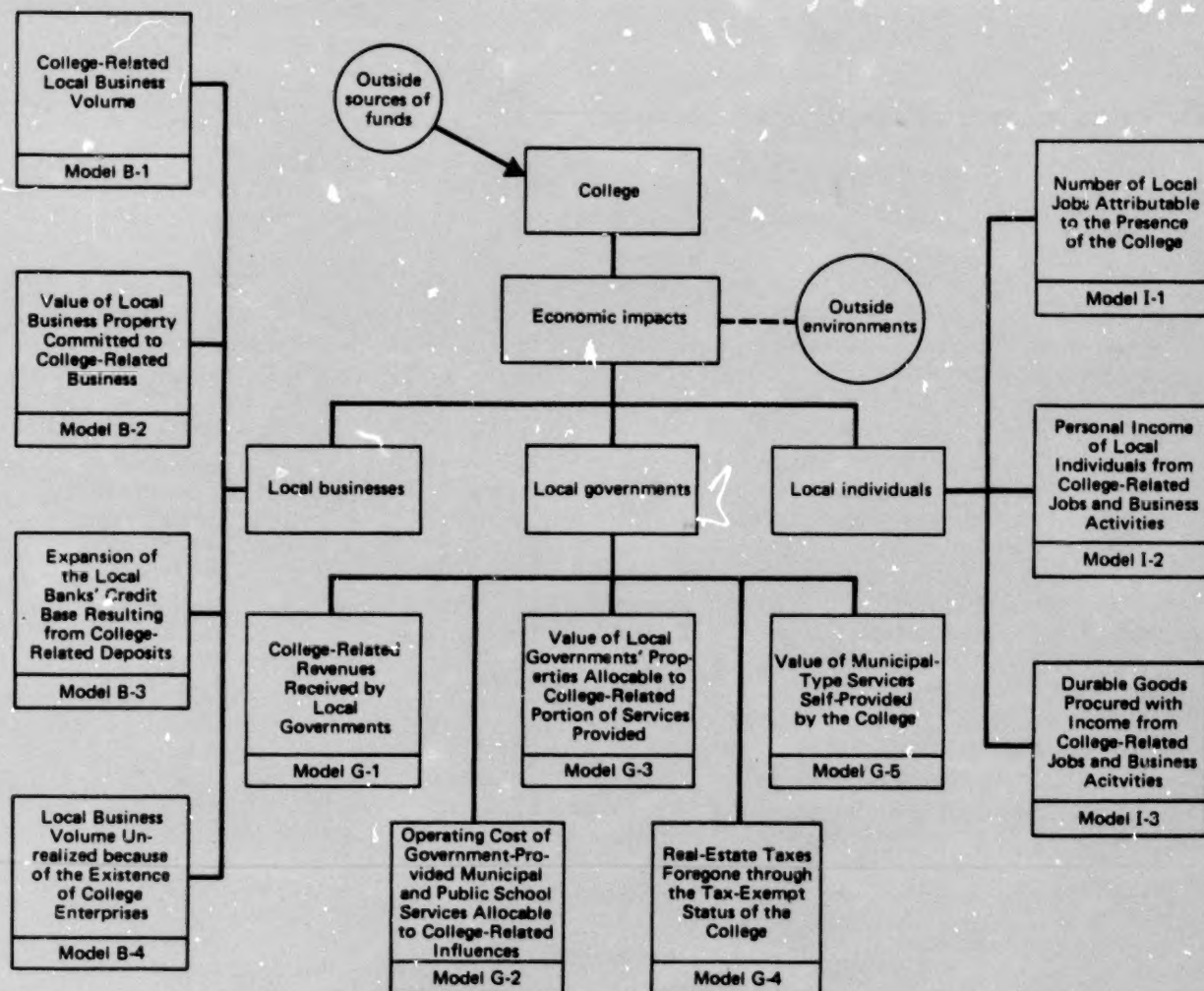
Throughout the text, the words *proportion* and *percentage* are used. Some readers might find it helpful to review the following definitions of the terms as used herein:

A *proportion* is a decimal equivalent of a fraction; hence, $0.8 = 8/10$ or $4/5$, or eight out of ten or four out of five.

A *percentage* is a proportion multiplied by 100; hence $8/10$ or $4/5 = 80$ percent.

A simple reminder or caution may be useful: 80 percent of a dollar is 80 cents, not 80 dollars. That is, 80 percent of $\$1.00 = \$0.80$, not $\$80$.

FIG. 4. Economic impacts on local businesses, governments, and individuals



BUSINESS MODELS

College-Related Local Business Volume

Model B-1 and its component submodels accumulate the direct purchases from local businesses made by the college and faculty, staff, students, and visitors (B-1.1); the purchases from local sources by local businesses in support of their college-related business volume, or "second-round" purchases (B-1.2); and the amount of local business volume stimulated by the expenditure of college-related income by local individuals other than faculty, staff, or students (B-1.3). (This last element is one of the multiplier effects discussed in appendix B.)

College-related local expenditures

Model B-1.1 is the dollar value of college-related local direct expenditures. These include expenditures by the college as

an institution (B-1.1.1), by faculty and staff (B-1.1.2), by students (B-1.1.3), and by visitors to the college (B-1.1.4).

College expenditures

Model B-1.1.1 estimates the value of purchases of goods and services by the college from local businesses, only a portion of total college expenditures. The proportion, $(e_L)_C$, should be derived from total expenditures, excluding wages and salaries, $W_{F,S}$; various account transfers and internal payments that appear on the books, XF_C ; and taxes and other payments to governments, R_C . Because of the large number of expenditure transactions, the college may wish to sample its disbursements and vendor records to estimate the proportion.

Wages and salaries are not included here but are considered separately below. Accounting entries that

TABLE 3

Economic impacts on local businesses

- B-1. College-Related Local Business Volume
 - B-1.1. College-Related Local Expenditures
 - B-1.1.1. Local Expenditures by the College
 - B-1.1.2. Local Expenditures by Faculty and Staff
 - B-1.1.2.1. Expenditures by Faculty and Staff for Local Rental Housing
 - B-1.1.2.2. Local Nonhousing Expenditures by Local Faculty and Staff
 - B-1.1.2.3. Local Expenditures by Nonlocal Faculty and Staff
 - B-1.1.3. Local Expenditures by Students
 - B-1.1.3.1. Local Miscellaneous Expenditures, Exclusive of Room and Board, by Students Obtaining Local Room and Board in Group Arrangements or with Parents
 - B-1.1.3.2. Expenditures by Students for Local Rental Housing
 - B-1.1.3.3. Local Nonhousing Expenditures by Students Who Rent Housing
 - B-1.1.3.4. Local Expenditures by Nonlocal Students
 - B-1.1.3.5. Local Expenditures by Local Fraternities, Sororities, and Other Student Living Groups
 - B-1.1.4. Local Expenditures by Visitors to the College
 - B-1.2. Purchases from Local Sources by Local Businesses in Support of Their College-Related Business Volume
 - B-1.3. Local Business Volume Stimulated by the Expenditure of College-Related Income by Local Individuals Other than Faculty, Staff, or Students
- B-2. Value of Local Business Property Committed to College-Related Business
 - B-2.1. Value of Local Business Real Property Committed to College-Related Business
 - B-2.2. Value of Local Business Inventory Committed to College-Related Business
 - B-2.3. Value of Local Business Property, Other Than Real Property and Inventory, Committed to College-Related Business
- B-3. Expansion of the Local Banks' Credit Base Resulting from College-Related Deposits
- B-4. Local Business Volume Unrealized because of the Existence of College Enterprises

charge departments within the college for their share of joint services are not included since they do not represent external purchases. Taxes and other payments to all governments are excluded since, by definition, they are not in the business sector. This model provides a good example of how the models tend to understate the impact of the college upon its environment. In exempting wages and salaries, deductions for pensions and insurance are excluded as well. These, as well as receipts from pension

TABLE 4

Economic impacts on local governments

- G-1. College-Related Revenues Received by Local Governments
 - G-1.1. College-Related Real-Estate Taxes Paid to Local Governments
 - G-1.1.1. Real-Estate Taxes Paid to Local Governments by the College
 - G-1.1.2. Real-Estate Taxes Paid to Local Governments by Local Faculty and Staff
 - G-1.1.3. Real-Estate Taxes Paid to Local Governments by Local Fraternities, Sororities, and Other Student Living Groups
 - G-1.1.4. Real-Estate Taxes Paid to Local Governments by Local Businesses for Real Property Allocable to College-Related Business
 - G-1.2. College-Related Property Taxes, Other Than Real-Estate, Paid to Local Governments
 - no model Inventory and Other Nonreal-Property Taxes Paid to Local Governments by the College (Obtain from college records.)
 - G-1.2.1. Nonreal-Property Taxes Paid to Local Governments by Local Faculty and Staff
 - G-1.2.2. Nonreal-Property Taxes Paid to Local Governments by Local Fraternities, Sororities, and Other Student Living Groups
 - G-1.2.3. Inventory and Other Nonreal-Property Taxes Paid to Local Governments by Local Businesses for Assets Allocable to College-Related Business
 - G-1.3. Sales Tax Revenue Received by Local Governments as a Result of College-Related Local Purchases
 - G-1.4. State Aid to Local Governments Allocable to the Presence of the College
 - G-1.4.1. State Aid to Local Public Schools Allocable to Children of College-Related Families
 - no model Other State Aid Received by Local Governments on a Per Capita, Service-Unit, or Tax-Unit Basis and Influenced by the Presence of the College, e.g., Gasoline Tax Allocations, Road Maintenance Subsidies (Establish on the basis of local conditions.)
 - G-1.5. Other College-Related Revenues Collected by Local Governments
- G-2. Operating Cost of Local Government-Provided Municipal and Public School Services Allocable to College-Related Influences
 - G-2.1. Operating Cost of Government-Provided Municipal Services Allocable to College-Related Influences
 - G-2.2. Operating Cost of Local Public Schools Allocable to College-Related Persons
- G-3. Value of Local Governments' Properties Allocable to College-Related Portion of Services Provided
- G-4. Real-Estate Taxes Foregone through the Tax-Exempt Status of the College
- G-5. Value of Municipal-Type Services Self-Provided by the College

TABLE 5

Economic impacts on local individuals

- I-1. Number of Local Jobs Attributable to the Presence of the College
 I-2. Personal Income of Local Individuals from College-Related Jobs and Business Activities
 I-3. Durable Goods Procured with Income from College-Related Jobs and Business Activities

Model B-1

BV_{CR}

College-Related Local Business Volume

$$BV_{CR} = (E_L)_{CR} + (P_{LB})_{CR} + (BV_I)_{CR}$$

- $(E_L)_{CR}$ = college-related local expenditures (model B-1.1)
 $(P_{LB})_{CR}$ = purchases from local sources by local businesses in support of their college-related business volume (model B-1.2)
 $(BV_I)_{CR}$ = local business volume stimulated by the expenditure of college-related income by local individuals other than faculty, staff, or students (model B-1.3)

Model B-1.1

 $(E_L)_{CR}$

College-Related Local Expenditures

$$(E_L)_{CR} = (E_L)_C + (E_L)_F + (E_L)_S + (E_L)_V$$

- $(E_L)_C$ = local expenditures by the college (model B-1.1.1)
 $(E_L)_F$ = local expenditures by faculty and staff (model B-1.1.2)
 $(E_L)_S$ = local expenditures by students (model B-1.1.3)
 $(E_L)_V$ = local expenditures by visitors to the college (model B-1.1.4)

and insurance funds, are not included in any other model, yet they may have some impact on the community.

Faculty and staff expenditures

Model B-1.1.2 estimates the dollar volume of local purchases of personal goods and services by college faculty and staff households. These purchases are made by two groups, those residing locally and those residing outside the community. Both rental housing and nonhousing expenditures by local residents are considered. Nonrental

Model B-1.1.1

 $(E_L)_C$

Local Expenditures by the College*

$$(E_L)_C = (e_L)_C (E_C - W_{F,S} - X_{FC} - R_C)$$

- $(e_L)_C$ = proportion of total college expenditures that are local, excluding compensation, internal items, and taxes
 E_C = total college expenditures
 $W_{F,S}$ = gross compensation to faculty, staff, and students
 X_{FC} = internal account transfers and payments
 R_C = taxes and other payments to governments

* The study team may wish to immediately exclude from consideration those expenditures known to be nonlocal, for example, payments for outside computer services. If used, this factor may be expressed as E_{NL} . The equation would then read:

$$(E_L)_C = (e_L)_C (E_C - E_{NL} - W_{F,S} - X_{FC} - R_C).$$

Model B-1.1.2

 $(E_L)_F$

Local Expenditures by Faculty and Staff

$$(E_L)_F = (E_H)_F + (E_{NH})_F + (E_L)_{NLF}$$

- $(E_H)_F$ = expenditures by faculty and staff for local rental housing (model B-1.1.2.1)
 $(E_{NH})_F$ = local nonhousing expenditures by local faculty and staff (model B-1.1.2.2)
 $(E_L)_{NLF}$ = local expenditures by nonlocal faculty and staff (model B-1.1.2.3)

housing is considered later as part of the value of local real property related to the college. For nonlocal faculty and staff, only nonhousing expenditures are considered. The three items added together should approximate the dollar value of local expenditures by the faculty and staff of the college.

Understatement is evident again in this model. Owner-occupied dwelling units are not considered. Real-property value is considered elsewhere, but model B-1.1.2 excludes such items as payments to real-estate brokers, payment of interest charges on outstanding mortgages to local banks, and payment of insurance premiums on owner-occupied dwelling units. Also avoided is any consideration of imputed rental on houses owned outright by faculty and staff, that is, what the rent might be if the houses were offered in the rental market.

Models B-1.1.2.1 and B-1.1.2.2 measure expenditures—rental housing and nonhousing—of local faculty and staff. These models represent the arithmetic products of the respective terms. Only disposable income is given as a dollar figure; expenditures are listed as percentages. Model B-1.1.2.1 yields a dollar value for the $(E_H)_F$ term in B-1.1.2.

Model B-1.1.2.1

$$(E_H)_F$$

Expenditures by Faculty and Staff for Local Rental Housing

$$(E_H)_F = (f_L) (f_H) (DI_F) (e_H)$$

- f_L = proportion of faculty and staff residing locally
 f_H = proportion of local faculty and staff who rent housing
 DI_F = total disposable income of faculty and staff
 e_H = proportion of a tenant's total expenditures likely to be spent for rental housing

Model B-1.1.2.2

$$(E_{NH})_F$$

Local Nonhousing Expenditures by Local Faculty and Staff

$$(E_{NH})_F = (f_L) (e_L) (DI_F) (e_{NH})_F$$

- f_L = proportion of faculty and staff residing locally
 e_L = proportion of total nonhousing expenditures that an individual is likely to make in his local environment (see appendix C)
 DI_F = total disposable income of faculty and staff
 $(e_{NH})_F$ = proportion of a consumer's total expenditures spent on nonhousing items

Both models are subject to an inherent bias, and, in applying them, the user should be aware of this problem. Both multiply the take-home pay of faculty and staff by the proportion of faculty and staff residing in the community. The underlying assumption is that the income received by those who reside in the college community is representative of all faculty and staff. Generally, however, the faculty will receive higher wages than the staff, and, if the college is located in a high-income community—e.g., the suburb of a large city—it is likely that faculty members will live close to the college, while staff members, with lower incomes, will be forced to live elsewhere in housing commensurate with their means.

If the college under consideration has conditions similar to those described above, it is recommended that

disposable income, DI_F , applied to the proportion of faculty and staff residing in the community, f_L , be adjusted to include primarily those with incomes commensurate with the local standard of living. In effect, then, both the income figure and the faculty and staff living in the local environment should be stratified by income class, type of employee, and other suitable categories that would take these effects into account.

The user should be aware of another aspect of these two models: income is assumed equal to expenditures. Clearly, this is not the case for large numbers of households. It is not the case if savings exist, if net borrowing or savings withdrawals exist, if there are other wage earners in the household (a particularly important source of income), and/or if there are other income sources such as dividends, royalties, or family business profits. The models assume that all disposable income received from the college by employees is spent. To the extent that some is not spent, the case is overstated; however, it is likely that a household has other income sufficient to make its total expenditures no less than the employee's salary after normal deductions. In effect, the net result of this assumption will probably yield a moderate understatement of the annual purchases of goods and services from local businesses by resident faculty and staff.

Model B-1.1.2.3 expresses local expenditures made by nonlocal faculty and staff. The previously obtained f_L is the proportion of faculty and staff residing locally. Therefore, $1 - f_L$ is the proportion of faculty and staff not residing locally. This proportion, multiplied by the total

Model B-1.1.2.3

$$(E_L)_{NLF}$$

Local Expenditures by Nonlocal Faculty and Staff

$$(E_L)_{NLF} = (1 - f_L) (F) (E_1)_F$$

- f_L = proportion of faculty and staff residing locally
 F = total number of faculty and staff
 $(E_1)_F$ = estimated average local expenditures by each nonlocal faculty and staff person

number of faculty and staff, F , yields the number of nonlocal faculty and staff.

Student expenditures

Model B-1.1.3 involves five terms that are added to obtain an estimate of the total local expenditures by students. The economic behavior of students varies as widely as their other actions. Before discussing the particular models, it will be helpful to consider categorization of students for the present purpose.

Model B-1.1.3

 $(E_L)_S$

Local Expenditures by Students

$$(E_L)_S = (E_M)_S + (E_H)_S + (E_{NH})_S + (E_L)_{NLS} + (E_{LG})_S$$

$(E_M)_S$ = local miscellaneous expenditures by students obtaining local room and board from dormitories, fraternities, sororities, other groups, or parents (model B-1.1.3.1)

$(E_H)_S$ = expenditures by students for local rental housing (model B-1.1.3.2)

$(E_{NH})_S$ = local nonhousing expenditures by students who rent local housing (model B-1.1.3.3)

$(E_L)_{NLS}$ = local expenditures by nonlocal students (model B-1.1.3.4)

$(E_{LG})_S$ = local expenditures by local fraternities, sororities, and other student living groups (model B-1.1.3.5)

The first category includes students who live in college- or university-operated residences and therefore do not purchase housing services in the community. A considerable portion of their food expenditures may be made in contract with residence halls or in payment for meals in college-owned commissaries. Depending on the community in which the college is located, a large portion of student entertainment and incidentals may be purchased from the college itself. In other cases, local merchants may meet many demands by resident students for entertainment, school supplies, clothing, medical services, and other purchasable items.

A second category is composed of those students who live off campus in the community, where housing and other commodities and services are purchased in one of three major forms:

1. Students may reside in group quarters, such as fraternities, sororities, cooperatives, or noncollege dormitories.
2. Students may reside with their parents, in which case one would not usually expect them to pay for the housing, food, or personal services normally provided in a family household.
3. Students may reside in private quarters, alone, with other students, or in student-run cooperatives. (One may assume that the number of students owning their residences is quite limited; thus, for the present, all students rent.)

A third major category is made up of those students who live outside the community and will be treated in the same manner as nonresident faculty and staff.

This partial categorization of students hardly exhausts the possibilities. We may distinguish students according to

sex, for example, recognizing that males and females will have different expenditure patterns. We may distinguish between graduate and undergraduate students or between those who are married and those who are single. In each case, we may expect different expenditure patterns. Of particular importance is the distinction between full-time and part-time students. Part-time students, including those who attend extension or evening courses, should not be grouped with full-time students. Consider the man who works in an office and takes an evening course in accounting. Even if the program that he carries is equivalent to a third of a full-time program, it would be inappropriate to consider a third of his expenditures as local purchases of goods and services by a student of the college. His housing, food, and other normal purchases are not really college related. Accordingly, we have treated part-time students as visitors to the college.

Model B-1.1.3.1 estimates the local expenditures, exclusive of room and board, by students obtaining room and board locally in group living arrangements or parental quarters. To obtain this dollar figure, we multiply the number of such students, S_L , by the estimated average expenditures (exclusive of room and board) per student of this type, $(E_M)_S$. The result is then multiplied by the proportion of total expenditures, exclusive of room and board, that a student is likely to make in his local environment, e_L (see appendix C).

Model B-1.1.3.1

 $(E_M)_S$

Local Miscellaneous Expenditures, Exclusive of Room and Board, by Students Obtaining Local Room and Board in Group Arrangements or with Parents

$$(E_M)_S = (S_L) (E_M)_S (e_L)$$

S_L = number of students obtaining local room and board from dormitories, fraternities, sororities, other groups, or parents

$(E_M)_S$ = average miscellaneous expenditures, exclusive of room and board, per student of this type

e_L = proportion of total expenditures, exclusive of room and board, that a student is likely to make in his local environment (see appendix C)

Model B-1.1.3.2 depicts expenditures by students for local rental housing. To obtain this figure, the number of students renting local housing, S_H , is multiplied by the average rental housing expenditure per student, $(E_H)_S$.

Model B-1.1.3.3 defines local nonhousing expenditures by students who rent local housing. The number of students renting local housing, S_H , is multiplied by the

Model B-1.1.3.2

$$(F_H)_S$$

Expenditures by Students for Local Rental Housing

$$(E_H)_S = (S_H) (E_h)_S$$

- S_H = number of students renting local housing
 $(E_h)_S$ = average rental housing expenditures per student

Model B-1.1.3.3

$$(E_{NH})_S$$

Local Nonhousing Expenditures by Students
Who Rent Local Housing

$$(E_{NH})_S = (S_H) (E_{nh})_S (e_L)$$

- S_H = number of students renting local housing
 $(E_{nh})_S$ = average nonhousing expenditures per student
 e_L = proportion of total nonhousing expenditures that a student is likely to make in his local environment (see appendix C)

average nonhousing expenditures per student, $(E_{nh})_S$ and the resulting figure is multiplied by the proportion of expenditures an individual is likely to make in his local environment, e_L .

In Model B-1.1.3.4, the local dollar expenditures by nonlocal students are estimated by multiplying the number of students not resident locally, S_{NL} , by the estimated average local expenditures by each such student, $(E_L)_S$.

Model B-1.1.3.4

$$(E_L)_{NLS}$$

Local Expenditures by Nonlocal Students

$$(E_L)_{NLS} = (S_{NL}) (E_L)_S$$

- S_{NL} = number of nonlocal students
 $(E_L)_S$ = estimated average local expenditures by each nonlocal student

Model B-1.1.3.5 depicts local expenditures by local fraternities, sororities, and other student living groups. To obtain this amount, two quantities are added. The first is the expenditures by student living groups for local rental housing; the second, the operating and food expenditures made locally by such groups.

Visitor expenditures

Still more diverse than the students of a college are its visitors. In few cases are careful records kept of the number

Model B-1.1.3.5

$$(E_{LG})_S$$

Local Expenditures by Local Fraternities, Sororities, and Other Student Living Groups

$$(E_{LG})_S = (E_{LGH})_S + (e_{LGNH})_S (E_{LGO})_S$$

- $(E_{LGH})_S$ = expenditures by student living groups for local rental housing
 $(e_{LGNH})_S$ = proportion of nonhousing expenditures made locally by local living groups
 $(E_{LGO})_S$ = operating and food expenditures of local living groups

of visitors or of their activities. One may, however, identify four general types of visitors: (a) the visitor who goes to the college for business reasons, e.g., book salesman, foundation representative, or guest lecturer; (b) the recreational visitor, e.g., one attending a football game, concert, or art exhibit; (c) the educational visitor, e.g., part-time student, conference attendee, or seminar participant; and (d) the personal visitor, e.g., parent, prospective student, friend, or sightseer. Excluded and, one hopes, infrequent are visitors such as police and national guardsmen.

The number of visitors falling into each category is a function of the program and setting of the institution. For example, during the course of the year, a college will be visited by many parents. If all or most students live at home, the visits will be of short duration, and few significant local purchases will be made as a result of the visits. On the other hand, if large numbers of students have parents living in other communities, visiting parents may stay in local hotels or motels and buy food, gasoline, film, and other commodities and services from local businesses.

How frequently parents come, how long they stay, and how much they spend are functions of their income levels and of the distances they travel to the campus. Furthermore, parents of undergraduates might visit more frequently than would parents of graduate students, parents of female students more frequently than those of male students, and parents of freshmen and seniors more frequently than those of sophomores and juniors.

Model B-1.1.4 considers local expenditures by visitors. To obtain this figure, multiply the total number of visitors in any category mentioned above by the estimated local expenditures for each such visitor, and sum the results for n categories. The particular categories chosen can be as gross as the four described above, or they can be broken down in more detail if such data are available.

In the case of visitors, if the definition is in doubt, the category can be limited to those persons who would not normally have spent anything in the defined environment had it not been for the college's location in it. If survey data are available, it is obviously better to substitute them

Model B-1.1.4

$$(E_L)_V$$

Local Expenditures by Visitors to the College

$$(E_L)_V = (V_1)(E_1)_V + (V_2)(E_2)_V + \dots + (V_n)(E_n)_V$$

 (V_n) = estimated number of visits to the college by visitors in the n^{th} category $(E_n)_V$ = estimated local expenditures by each visitor in the n^{th} category during each visit to the college

for estimates. Sample data can provide improved estimation factors even when data are not complete for a given event or class of visitors.

Facts about visitor expenditures are likely to be more difficult to obtain or verify than are facts obtainable from institutional files or personnel or from local community agencies.

In calculating expenditures by visitors, it may be useful to confer with local businessmen or civic agencies, who may already have compiled data about such expenditures. Certain campus officials, such as those concerned with alumni, public relations, athletics, special events, or police, may be able to list the types of events that bring visitors to campus and the approximate expenditures made by each person.

It is important to *list all the categories* in the final report of the study, even if dollar values cannot be accurately ascribed in each case. The mere enumeration may be impressive and may convey more than or as much as dollar sums.

If it is desirable to gather sample survey data from visitors, especially from alumni, it should be recalled that most such visitors either feel considerable good will toward the institution and will be happy to cooperate in filling out short survey forms about their expenditures during visits or are upset over some incident during the visit and will be willing to complain about their expenses.

Second-round local expenditures

Models B-1.2 and B-1.3 indicate the additional volume of local business activity resulting from stimuli provided by the purchases of goods and services considered in the other B-1 models. When the college buys from a local supplier or when a visitor eats in a local restaurant, a long train of economic transactions is set off. The initial dollar is respent many times; it may reappear as income to residents of the community, as business receipts by other local merchants, or as payment to suppliers outside the community.

Model B-1.2 estimates the volume of purchases by local concerns in support of their college-related business. Thus, the coefficient m_p represents the proportion of receipts from college-related purchases used in turn to purchase goods and services from local sources.

Model B-1.2

$$(P_{LB})_{CR}$$

Purchases from Local Sources by Local Businesses in Support of Their College-Related Business Volume

$$(P_{LB})_{CR} = (m_p)(E_L)_{CR}$$

 m_p = coefficient representing the degree to which local businesses purchase goods and services from local sources $(E_L)_{CR}$ = college-related local expenditures (model B-1.1)**Model B-1.3**

$$(BV_I)_{CR}$$

Local Business Volume Stimulated by the Expenditure of College-Related Income by Local Individuals Other Than Faculty, Staff, or Students

$$(BV_I)_{CR} = (m_i)(E_L)_{CR}$$

 m_i = coefficient representing the degree to which individual income received from local business activity is spent and respent locally $(E_L)_{CR}$ = college-related local expenditures (model B-1.1)

This multiplier will tend to be smaller for highly specialized communities and for small communities within large urban areas than for the diversified, large city. How long it takes for the indirect effects to work their way through the economy is not known, but one may expect that the major effects will certainly take place within a year.

Model B-1.3, the second estimation of indirect effects of college-related business activity, represents personal-income-induced business activity in the local community. As noted above, some of the receipts by local businessmen will be paid out to local residents in the form of wages, salaries, and entrepreneurial returns, and a portion of this money will be spent for the everyday purposes of its recipients. The coefficient m_i represents the proportion of income received from local college-related business activity that is spent and respent locally.

Value of Local Business Property

Model B-2 pictures the capital and property related to the business activity generated by the presence of a college, as seen in models B-1.1, B-1.2, and B-1.3. If we consider these three components— $(E_L)_{CR}$, $(P_{LB})_{CR}$, and $(BV_I)_{CR}$ —as purchases, we can then say that we are trying to determine what portions of the existing capital and property relate to this observed flow of purchases. In effect, we are indicating how much capital and property are currently employed by

Model B-2

$$(PR_B)_{CR}$$

Value of Local Business Property Committed to College-Related Business

$$(PR_B)_{CR} = (RP_B)_{CR} + (I_B)_{CR} + (OP_B)_{CR}$$

$(RP_B)_{CR}$ = value of local business real property committed to college-related business (model B-2.1)

$(I_B)_{CR}$ = value of local business inventory committed to college-related business (model B-2.2)

$(OP_B)_{CR}$ = value of local business property, other than real property and inventory, committed to college-related business (model B-2.3)

business enterprises for each dollar of sales. This average figure is then apportioned to college-related sales.

For model B-2.1, a direct statement of the dollar value of capital facilities in the business community is normally not obtainable, thus making it necessary to use assessed valuation of business property. Variations in local and state assessment laws and practices mean that assets are treated differently under different jurisdictions. In addition, the frequency of reassessment will influence the estimates for this model; with rising prices, old assessments understate current market values. Assessed value, V_B , is converted to market value by the coefficient amv , the locally used ratio of assessed value to market value of taxable real property. The ratio of college-related local business volume, BV_{CR} , to total local business volume, BV_L , is then multiplied by the market value of the real property.

Model B-2.1

$$(RP_B)_{CR}$$

Value of Local Business Real Property Committed to College-Related Business

$$(RP_B)_{CR} = \frac{BV_{CR}}{BV_L} \frac{V_B}{amv}$$

BV_{CR} = college-related local business volume (model B-1)

BV_L = local business volume

V_B = assessed valuation of local business real property

amv = local ratio of assessed value to market value of taxable real property

Model B-2.2 represents the value of inventory required for college-related business. To obtain this dollar figure, college-related local business volume (model B-1) is multiplied by the locally used inventory-to-business-volume

Model B-2.2

$$(I_B)_{CR}$$

Value of Local Business Inventory Committed to College-Related Business

$$(I_B)_{CR} = (ibv) (BV_{CR})$$

ibv = inventory-to-business-volume ratio

BV_{CR} = college-related local business volume (model B-1)

ratio. This latter figure will differ from business to business and from community to community. It is suggested that a local ratio, if not available from reliable sources, be determined on a sampling basis.

Model B-2.3 estimates the value of local business property, other than real property and inventory, committed to college-related business. To obtain this figure, sum the ratios of such property to business volume for each local enterprise. The average ratio is then found by dividing this total by n , the number of local enterprises accounted for. This average ratio for local enterprises is then multiplied by the ratio of college-related business volume to total local business volume.

Model B-2.3

$$(OP_B)_{CR}$$

Value of Local Business Property, Other Than Real Property and Inventory, Committed to College-Related Business

$$(OP_B)_{CR} = \frac{\frac{OP_1}{BV_1} + \frac{OP_2}{BV_2} + \dots + \frac{OP_n}{BV_n}}{n} \frac{BV_{CR}}{BV_L}$$

OP_n = value of local business property, other than real property and inventory, of the n^{th} enterprise

BV_n = business volume of the n^{th} enterprise

BV_{CR} = college-related local business volume (model B-1)

BV_L = local business volume (model B-2.1)

Expansion of the Local Credit Base

Another secondary effect resulting from the economic activity of the college and of its associated personnel is the expansion of the credit base of local banks resulting from deposits by the college and its personnel and from the business activity they generate. Given the complexities of the banking business and the prevalence of branch banking (which often means that neither all deposits nor all decision-making functions are retained in the community), it is

difficult to say how much the credit base of local banks is expanded by these deposits. In very fuzzy or complex cases, this analysis will best be skipped.

We may, however, obtain a minimum estimate, as indicated in model B-3. Assume that the average level of deposits in the time and demand accounts of the college; of its faculty, staff, and students; and of business enterprises¹ can be expanded by one minus the minimum legal reserve requirements. For example, if the minimum reserve requirement is 20 percent—that is, if the bank must hold in reserve against withdrawals from its accounts 20 percent of the amount of those accounts—then 80 percent of the funds may be available for loan. Whether these funds are loaned and to whom they are loaned are not of interest here; the intent is to note the availability of more funds in the local money market.

Model B-3

CB

Expansion of the Local Banks' Credit Base
Resulting from College-Related Deposits

$$CB = (1-t) [TD_c + (TD_f)(F) + (TD_s)(S)]$$

$$+ (1-d) [DD_c + (DD_f)(F) + (DD_s)(S) + (cbv)(BV_{CR})]$$

t	=	local time-deposit reserve requirement
TD _c	=	average time deposit of the college in local banks
TD _f	=	average time deposit of each faculty and staff person in local banks
F	=	total number of faculty and staff
TD _s	=	average time deposit of each student in local banks
S	=	total number of students
d	=	local demand-deposit reserve requirement
DD _c	=	average demand deposit of the college in local banks
DD _f	=	average demand deposit of each faculty and staff person in local banks
DD _s	=	average demand deposit of each student in local banks
cbv	=	cash-to-business-volume ratio
BV _{CR}	=	college-related local business volume (model B-1)

The time and demand deposits of faculty, staff, and students residing either on campus or in the community would be included without survey data or specific local

1. It is assumed that businesses are not likely to hold funds in savings accounts; hence, business is considered only in relation to demand deposits.

information. This practice would underestimate such deposits because one might well suppose that some employees have a tendency to bank near their place of work. Because of this factor, the total number of faculty, staff, and students—rather than the number of local residents—has been used. As is shown in the model, an average time-deposit figure is used. These figures may be obtained per faculty and staff member. However, if averages are used, one must compute the average per person and multiply by the number of persons residing in the community.

It is probable that in economic impact studies the credit-base factor is almost never taken into account. It may be possible to make a subjective judgment that the analysis is not worth the trouble, but this should not be assumed. In some cases, the college may have very significant deposits in or other relationships to local banks. It seems practical to suggest that one or more leading local bankers or bank managers be consulted for their opinions of the worth of such analysis. In many communities, the cooperation of local banks may be very valuable and well worth seeking both in this and in many other aspects of the kind of economic impact study described in this book. Banks may be good sources of data and of leads to other sources—and of informed opinions on local economic factors and conditions.

Unrealized Local Business Volume

Colleges are in competition with all other economic enterprises for the dollars of their constituents. Within the vast and variegated college enterprise are business activities directly comparable to and competitive with businesses that might exist—or do in fact exist—in the community. College dormitories, for example, are in competition with existing or potential off-campus rental housing. College commissaries compete with local restaurants. College-sponsored films compete with those shown in local theaters, and student stores compete with local retail establishments.

Model B-4 may be useful in assessing the magnitude of the market potentially available to local enterprise but currently the domain of the college. Therefore, we include in this model all revenues received from college-operated enterprises, a figure that should be obtainable from the college's own business office or auxiliary activity records. Note, however, that we do not address hypothetical ques-

Model B-4

$$(BV_U)_C$$

Local Business Volume Unrealized because of
the Existence of College Enterprises

$$(BV_U)_C = (I_{BV})_C$$

$(I_{BV})_C$ = income received by the college from the operation of local and on-campus college-owned business enterprises

tions such as what business *might* have spring up in the community had it not been for the presence of the college.

GOVERNMENT MODELS

Local government is the second sector of the local economy with which these models are concerned. It is likely that any college or university is subject to the jurisdictions of two or more city, county, or regional tax-supported authorities. If not located in an incorporated city, the college is subject to taxation by the borough, township, or county in which it is located. In many cases, college property is subject to taxation to support one or more school districts. The land on which the college is located may also be subject to taxation by any one of a dozen special districts, such as those for mosquito or flood control, fire, water, or sewage.

Usually, although all college land is potentially subject to taxation, only a portion of it, or of its revenues, will be taxed by local governments. Intergovernmental tax immunity renders some college property and improvements thereon untaxable because the college is operated by a government such as a state, city, or community college district. Further, church-related institutions of learning are exempt from local taxation through their religious affiliation. Finally, educational institutions incorporated as non-profit organizations are normally exempt from local property taxation.

This set of models is designed to reveal the effects of the presence of the college upon government revenues and expenditures. As in the case of the business sector, the college is not considered as an isolated phenomenon, but rather as an institution with many associated individuals and activities.

To understand the relation between the college and the local governments, one must consider five separate aspects of their interaction. First, model G-1 includes taxes and other revenues, including state funds, received as a result of the presence of the college and college-related individuals and activities. The second set of models, G-2, involves government expenditures and considers the annual operating costs of government-provided municipal and public school services allocable to college-related influences.

There is a natural temptation to compare revenues with expenditures. Presumably, if revenues exceed expenditures, one could say that the local governments are coming out ahead, and if, on the other hand, expenditures exceed revenues, one could say that they are coming up short. In all fairness, this would be a gross misuse of these models. The user should be aware that the models are intended to provide only estimates of the impact of the college upon the community and that he cannot accept a simple balance sheet when so many important, unmeasurable, and intangible factors are beyond exact quantitative analysis.

In model G-3, neither dollar revenues nor expenditures but rather the value of local governmental properties allocable to the college-related portion of services provided

are considered. Model G-4 shows an attempt to estimate the amount of real-estate taxes foregone through the tax-exempt status of the college. Many colleges provide services to themselves or to the community that the municipality might otherwise provide, e.g., the college police force. The value of these self-provided services is estimated in model G-5.

College-Related Revenues Received by Local Governments

Model G-1 summarizes the annual tax receipts, state aid, and other local government receipts derived from the college and from college-related persons and business activities. The submodels in G-1 do not take into account the national diversity of taxation, fee structures, user charges, and other revenue techniques of local governments. Therefore, the models are presented in the most general terms,

Model G-1

$$R_{CR}$$

College-Related Revenues Received by Local Governments

$$R_{CR} = (R_{RE})_{CR} + (R_{NRE})_{CR} + (R_{ST})_{CR} + (R_A)_{CR} + (R_Q)_{CR}$$

$(R_{RE})_{CR}$ = college-related real-estate taxes paid to local governments (model G-1.1)

$(R_{NRE})_{CR}$ = college-related property taxes, other than real-estate, paid to local governments (model G-1.2)

$(R_{ST})_{CR}$ = sales tax revenue received by local governments as a result of college-related local purchases (model G-1.3)

$(R_A)_{CR}$ = state aid to local governments allocable to the presence of the college (model G-1.4)

$(R_Q)_{CR}$ = other college-related revenues collected by local governments (model G-1.5)

concentrating on property taxes (which are universal) but requiring that the user have considerable knowledge and understanding of the structure of local government finance in his own environment. The five major submodels of G-1 are associated, respectively, with real-estate, nonreal-property, and sales taxes paid to local government; state aid allocable to the presence of the college; and other college-related revenues collected by local government.

College-related real-estate taxes

Model G-1.1 estimates the annual payment of real-estate taxes to local governments by the college, by local faculty and staff, by local student living groups, and by local businesses for real property allocable to college-related business.

Model G-1.1.1 represents the direct payments by the college to local governments. These would include taxes on

Model G-1.1

$$(R_{RE})_{CR}$$

College-Related Real-Estate Taxes Paid Local Governments

$$(R_{RE})_{CR} = (R_{RE})_C + (R_{RE})_F + (R_{RE})_S + (R_{RE,B})_{CR}$$

$(R_{RE})_C$ = real-estate taxes paid to local governments by the college (model G-1.1.1)

$(R_{RE})_F$ = real-estate taxes paid to local governments by local faculty and staff (model G-1.1.2)

$(R_{RE})_S$ = real-estate taxes paid to local governments by local fraternities, sororities, and other student living groups (model G-1.1.3)

$(R_{RE,B})_{CR}$ = real-estate taxes paid to local governments by local businesses for real property allocable to college-related business (model G-1.1.4)

Model G-1.1.1

$$(R_{RE})_C$$

Real-Estate Taxes Paid to Local Governments by the College

Obtain from college records

property owned by the college but not used for educational or religious purposes, for example, apartment houses not used for student housing.

Model G-1.1.2 represents the real-estate taxes paid to local governments by local faculty and staff. Whereas the number of faculty and staff who own their own homes and who live in the local environment have previously been determined, it is now necessary to know the annual real-property tax payments by the faculty and staff to local governments. The model assumes that faculty and staff personnel who own their own homes live in facilities of average value. This assumption should be examined carefully by the user of the model. Faculty and staff who reside in the community may live in newer, more expensive housing than that of the long-term residents of the community. This is likely where there is considerable turnover among the members of the college faculty. If, however, the college faculty has been stable and the community has been growing rapidly, the houses in which faculty and staff live may be older dwelling units on large lots. Thus, although the value of the houses themselves may be lower than that of housing currently being constructed, the value of the land is sufficiently great that, taken together, the value of the property owned by faculty and staff may be higher than the community average.

Available figures may make it unnecessary for the user to estimate the average value of private dwelling units in the community. For example, the median value of owner-occupied dwelling units is provided by the U.S. Census of

Model G 1.1.2

$$(R_{RE})_F$$

Real-Estate Taxes Paid to Local Governments by Local Faculty and Staff

$$(R_{RE})_F = \left[(F_L)(1-f_H) \right] \left[pt \frac{V_{PR}}{N_{PR}} \right]$$

F_L = number of faculty and staff residing locally

f_H = proportion of local faculty and staff who rent housing (see model B-1.1.2.1)

pt = local property tax rate

V_{PR} = total assessed valuation of all local private residences

N_{PR} = total number of local private residences

Housing. This median value reflects biases working in opposite directions: the respondent has a tendency to understate the perceived value of the house because he is answering a government's questionnaire and may believe subconsciously that his tax bill will be affected by his response; however, the respondent is also likely to think of the value of his house in terms of a desirable selling price rather than a true market value.

To obtain $(R_{RE})_F$, consider the total number of faculty and staff residing locally, F_L . The proportion who own their homes is one minus the percentage of faculty and staff who rent housing. The resulting proportion is multiplied by the total number of faculty and staff residing locally to yield the number of faculty and staff members who own their homes locally. Then V_{PR} is divided by N_{PR} to obtain the assessed valuation per local private residence. Multiplied by the local property tax rate, the result is the local property tax per local private residence. This is then multiplied by the number of faculty and staff who own homes locally to yield the total property taxes paid by that group.

Model G-1.1.3 accounts for real-estate taxes paid to local governments by local fraternities, sororities, and other student living groups. To obtain this, add the respective taxes of each student living group. These numbers should be obtained from the records of each group.

Model G-1.1.3

$$(R_{RE})_S$$

Real-Estate Taxes Paid to Local Governments by Local Fraternities, Sororities, and Other Student Living Groups

$$(R_{RE})_S = (R_{RE})_{S1} + (R_{RE})_{S2} + \dots + (R_{RE})_{Sn}$$

$(R_{RE})_{Sn}$ = real-estate taxes paid to local governments by local student living groups in the n^{th} category

Model G-1.1.4

$$(R_{RE,B})_{CR}$$

Real-Estate Taxes Paid Local Governments by Local Businesses for Real Property Allocable to College-Related Business

$$(R_{RE,B})_{CR} = (pt) \left(\frac{BV_{CR}}{BV_L} V_B \right)$$

- pt = local property tax rate (see model G-1.1.2)
 BV_{CR} = college-related local business volume (model B-1)
 BV_L = local business volume (see model B-2.1)
 V_B = assessed valuation of local business real property (see model B-2.1)

Model G-1.1.4 estimates the value of real-estate taxes paid to local governments by local businesses for real property allocable to college-related business. First, estimate the dollar value of real property allocable to college-related business by determining the product of the bracketed terms. The ratio of college-related local business volume, BV_{CR} , to total local business volume, BV_L , is multiplied by the assessed valuation of local business real property, V_B . The product of these terms is then multiplied by the local property tax rate, pt .

College-related property taxes

Model G-1.2 is concerned with the payment of property taxes, other than real-estate, allocable to the college, e.g., inventory and personal-property taxes. The first term to the right of the equal sign, $(R_{NRE})_C$, represents such taxes

Model G-1.2

$$(R_{NRE})_{CR}$$

College-Related Property Taxes, Other Than Real-Estate, Paid to Local Governments

$$(R_{NRE})_{CR} = (R_{NRE})_C + (R_{NRE})_F + (R_{NRE})_S + (R_{NRE,B})_{CR}$$

$(R_{NRE})_C$ = inventory and other nonreal-property taxes paid to local governments by the college (obtain from college records)

$(R_{NRE})_F$ = nonreal-property taxes paid to local governments by local faculty and staff (model G-1.2.1)

$(R_{NRE})_S$ = nonreal-property taxes paid to local government by local fraternities, sororities, and other student living groups (model G-1.2.2)

$(R_{NRE,B})_{CR}$ = inventory and other nonreal-property taxes paid to local governments by local businesses for assets allocable to college-related business (model G-1.2.3)

Model G-1.2.1

$$(R_{NRE})_F$$

Nonreal-Property Taxes Paid to Local Governments by Local Faculty and Staff

$$(R_{NRE})_F = F_L \frac{R_{OP}}{T_C}$$

- F_L = number of faculty and staff residing locally (see model G-1.1.2)
 R_{OP} = total property taxes for other than real estate or inventories paid to local governments
 T_C = total number of local households

paid to local governments by the college itself. The subsequent terms are dealt with separately in submodels G-1.2.1, G-1.2.2, and G-1.2.3.

The first submodel, G-1.2.1, expresses the value of nonreal-property taxes paid to local governments by local faculty and staff. To obtain this figure, set up the ratio of total property taxes for other than real estate or inventories

Model G-1.2.2

$$(R_{NRE})_S$$

Nonreal-Property Taxes Paid Local Governments by Local Fraternities, Sororities, and Other Student Living Groups

$$(R_{NRE})_S = (R_{NRE})_{S1} + (R_{NRE})_{S2} + \dots + (R_{NRE})_{Sn}$$

$(R_{NRE})_{Sn}$ = nonreal-property taxes paid to local governments by the n^{th} local student living group

Model G-1.2.3

$$(R_{NRE,B})_{CR}$$

Inventory and Other Nonreal-Property Taxes Paid to Local Governments by Local Businesses for Assets Allocable to College-Related Business

$$(R_{NRE,B})_{CR} = (it)(I_B)_{CR} + (ot)(OP_B)_{CR}$$

- it = local inventory tax rate
 $(I_B)_{CR}$ = value of local business inventory committed to college-related business (same as in model B-2.2)
 ot = local property tax rate for other than real estate or inventories
 $(OP_B)_{CR}$ = value of local business property, other than real property and inventory, committed to college-related business (same as in model B-2.3)

paid to local government, R_{OP} , to the total number of local households, T_C . This yields taxes per household and when multiplied by the number of faculty and staff residing locally, F_L , will show faculty and staff nonreal-property taxes. This model assumes that faculty and staff households will pay the same proportions of such taxes as the other local citizens.

Model G-1.2.2 estimates nonreal-property taxes paid to local governments by local fraternities, sororities, and other student living groups. Each term to the right of the equal sign may be said to represent student living group's taxes.

Model G-1.2.3 estimates the inventory and other non-real-property taxes paid to local governments by local businesses for assets allocable to college-related business. To determine the inventory taxes, multiply $(I_B)_{CR}$, the value of local business inventory committed to college-related business (from model B-2.2), by the local inventory tax rate, it . The second half of the right side of the equation involves taxes for property other than inventories and real property. This figure is the product of $(OP_B)_{CR}$, the value of local business property, other than real property and inventory, committed to college-related business (from model B-2.3) and the local property tax rate for other than real estate and inventories.

Sales tax revenues

Many local governments levy their own sales taxes and/or receive a share of the sales taxes collected by the state. Model G-1.3 represents the sales tax revenues received by local governments as a result of college-related local purchases. Working backward from the right side of the equation, take the ratio of college-related local business volume, BV_{CR} , to total local business volume, BV_L ; multiply it by the total sales tax collected locally, ST —a process that, in effect, yields college-related local sales tax—and multiply that product by the proportion of the sales tax retained by or returned to local governments, st_{LG} .

Model G-1.3

$$(R_{ST})_{CR}$$

Sales Tax Revenue Received by Local Governments as a Result of College-Related Local Purchases

$$(R_{ST})_{CR} = (st_{LG})(ST)\left(\frac{BV_{CR}}{BV_L}\right)$$

- st_{LG} = proportion of sales tax retained by local governments
 ST = total sales tax collected locally
 BV_{CR} = college-related local business volume
 BV_L = local business volume

State aid to local governments

Model G-1.4 summarizes another source of college-related revenue for the local government. For local schools, and

sometimes for other government operations, many states provide aid on the basis of population or of other criteria that the college might influence. Model G-1.4 shows both state aid to local public schools allocable to children of college-related families and other state aid received by local governments on various bases.

Model G-1.4

$$(R_A)_{CR}$$

State Aid to Local Governments Allocable to the Presence of the College

$$(R_A)_{CR} = (R_A)_{CH} + (R_A)_{PC}$$

- $(R_A)_{CH}$ = state aid to local public schools allocable to children of college-related families (model G-1.4.1)
 $(R_A)_{PC}$ = other state aid received by local governments on a per capita, service-unit, or tax-unit basis and influenced by the presence of the college, e.g., gasoline tax allocations, road maintenance subsidies (establish on the basis of local conditions)

Other state aid, $(R_A)_{PC}$, is an open-ended category of dissimilar items, since conditions vary from community to community. For example, in some states, municipal governments receive state highway funds on the basis of the number of registered vehicles. College faculty, staff, and students contribute to the number of vehicles registered in the community, particularly if the individuals do not actually reside locally. In other cases, local communities share gas tax receipts with the state and, to the extent that the college and its related personnel contribute to these receipts, they may in part be allocated to the college impact. Also included in $(R_A)_{PC}$, for example, may be state aid on a service-unit basis, such as miles of road. Insofar as some of this total mileage can be allocated to the college impact, it should be included here. In this model, as in many others presented in the study, the user must employ his knowledge of local laws and circumstances.

Model G-1.4.1 estimates the state aid provided to local public schools that is allocable to children of college-related families. In many states, aid is based on the number of students in average daily attendance, so that the local school district receives funds for each child from faculty, staff, and student families. To be precise, this model would require that the user know not only the number of such children enrolled in the public schools, as opposed to those in private schools or those too young for school, but also the grade level of each child. In many states, aid is differentiated by grade level, with more dollars per high school student than per elementary school student. In the model, the ratio of children of college-related families, $(CHPS)_F + (CHPS)_S$, to the total number of children

attending local public schools, CH_{PS} , is multiplied by total state aid to local public schools, A_{PS} . This yields an approximation of that portion of state aid to education allocable to college-related children. Note that local school officials may be able to supply more precise totals and/or averages and should always be consulted.

Model G-1.4.1

$$(R_A)_{CH}$$

State Aid to Local Public Schools Allocable to Children of College-Related Families

$$(R_A)_{CH} = A_{PS} \frac{(CH_{PS})_F + (CH_{PS})_S}{CH_{PS}}$$

A_{PS} = total state aid to local public schools

$(CH_{PS})_F$ = number of faculty and staff children attending local public schools (see model G-2.2)

$(CH_{PS})_S$ = number of students' children attending local public schools (see model G-2.2)

CH_{PS} = total number of children attending local public schools (see model G-2.2)

Other college-related revenues

Model G-1.5 accounts for the diverse types of taxes not considered in the foregoing sections. These include auto registration fees, user charges, license and permit fees, assessment charges, and other local revenues. Of the local government revenue models, this model requires the most thorough knowledge of local taxation and fee structures.

The first item in the model, auto registration fees from the college, faculty and staff, and students, if not available locally may be estimated in a gross way by assuming that the ratio of automobile owners is the same for the college population as for the local population in general. Thus, the ratio of college-related persons to the total local population, multiplied by the average auto registration fee, would yield a reasonable estimate. There will be great differences among types of communities.

The second item—user charges for utilities, sewers, sanitation, etc., paid by the college, faculty and staff, and students—is not quite as easy to calculate. For example, students are not likely to make important contributions to this type of revenue since many of them live on campus or in groups off campus. Still, the same type of logic may be used here as for the first item in this model.

The third item, fees for licenses and permits taken out by the college, can probably be obtained from college records and would include such items as fees for licenses to operate various enterprises, building permits, and vehicle-use stickers.

Item 4, assessment charges paid by the college, is also generally obtainable from college records. It should include

payments to the local government in lieu of taxes; for example, the college and the city may negotiate payments for the services of the fire, police, or other city departments, or the college may compensate the city for repair work done on streets running through the campus. The college may donate land to the city for street widening; in this case, it would be appropriate to estimate the value of such land and include that figure either in the year in which the land is donated or on some explicit and reasonable amortization schedule.

Model G-1.5

$$(R_Q)_{CR}$$

Other College-Related Revenues Collected by Local Governments

- $(R_Q)_{CR}$ =
1. auto registration fees from the college, faculty and staff, and students
 2. user charges for utilities, sewers, sanitation, etc., paid by the college, faculty and staff, and students
 3. fees for licenses and permits taken out by the college
 4. assessment charges paid by the college
 5. other local revenues

Item 5, other local revenues, is a catch-all. It includes any local government revenues—large and small—not specifically cited.

Operating Cost of Local Government-Provided Municipal and Public School Services

The associated models in G-2 are intended to express the annual operating costs of government services that are provided to the college and/or to individuals related to the college. These operating costs include those for government-provided municipal services allocable to college-related influences, $(OC_M)_{CR}$, and those for local public schools allocable to college-related persons, $(OC_{PS})_{CR}$.

Cost of government-provided municipal services

Model G-2.1 estimates the cost of government-provided municipal services allocable to college-related influences. If it were possible to separate these services definitively into those that are people-oriented versus those that are property-oriented, allocation could be made on a prorated basis with respect to population in the first case and with respect to either geographic area or value of property in the second. Such a distinction, however, is not easily made, and for the present purpose, population relationships will be emphasized. It is important to recognize that the population basis for allocating costs of services to a college area has the potential of overestimating the costs of services to the college by implicitly underestimating the services

rendered to business establishments. Businesses are usually capital intensive, and, because a college is usually labor intensive, the share of government expenditures allocated to it under this technique will probably be higher than it would be for an industrial installation.

The first terms on the right side of the model G-2.1 equation are used to determine the average college-related population of the community. This is estimated by adding two ratios—the ratio of college faculty and staff, F , and students, S , to total local daytime population, POP_{LD} , and the ratio of number of persons resident in faculty, staff, and student local households, $FH_L + SH_L$, to the total local resident population, POP_{LR} —and dividing by two. This method weights the two factors equally, but if there is some reason to give special weighting to one or the other, an appropriately different procedure can be adopted.

Finally, to find the portion of operating costs allocable to college-related populations, the ratio of college-related

local population to total population is multiplied by the local governments' operating budgets for all municipal services except public schools, B_M .

Operating cost of local public schools

In Model G-2.2, the logic of G-2.1 is employed. The ratio of the total number of college-related children attending local public schools, $(CH_{PS})_F + (CH_{PS})_S$, to the total number of children attending local public schools, CH_{PS} , is multiplied by the local governments' operating budgets for public schools. This yields the portion of the operating cost of local public education allocable to college-related persons.

Value of Local Governments' Properties

Model G-3 indicates the dollar value of local government-owned capital facilities that exist in support of services provided to the college and to college-related individuals. It is related to model G-2, which did not consider capital costs. Model G-3 provides an estimate of related capital facilities without attempting to state how much capital outlay will be needed specifically to provide such services. Such an attempt would involve assumptions concerning the nature of capital investment, the scale of operations at the time the investment is made, and a host of other factors that are beyond the scope of this method of study.

The valuation of public property is not well developed, because most data on public facilities are purchase or construction costs and do not always allow for depreciation. Private property, on the other hand, is assessed in relation to its market, not book, value. Today the valuation of public property is likely to be considerably lower than its true value or replacement cost. Thus, this model understates the value of such property allocable to college-related influences.

To obtain GP_{CR} , compute the ratio of the cost of government-provided municipal services allocable to col-

Model G-2

$$(OC_{M,PS})_{CR}$$

Operating Cost of Local Government-Provided Municipal and Public School Services Allocable to College-Related Influences

$$(OC_{M,PS})_{CR} = (OC_M)_{CR} + (OC_{PS})_{CR}$$

$(OC_M)_{CR}$ = operating cost of local government-provided municipal services allocable to college-related influences (model G-2.1)

$(OC_{PS})_{CR}$ = operating cost of local public schools allocable to college-related persons (model G-2.2)

Model G-2.1

$$(OC_M)_{CR}$$

Operating Cost of Government-Provided Municipal Services Allocable to College-Related Influences

$$(OC_M)_{CR} = \left(\frac{F + S}{POP_{LD}} + \frac{FH_L + SH_L}{POP_{LR}} \right) \left(\frac{B_M}{2} \right)$$

F = total number of faculty and staff (see model B-3)

S = total number of students (see model B-3)

POP_{LD} = total local daytime population

FH_L = total number of persons in local faculty and staff households

SH_L = total number of persons in local student households

POP_{LR} = total local resident population

B_M = local governments' operating budgets for all municipal services except public schools

Model G-2.2

$$(OC_{PS})_{CR}$$

Operating Cost of Local Public Schools Allocable to College-Related Persons

$$(OC_{PS})_{CR} = \left[\frac{(CH_{PS})_F + (CH_{PS})_S}{CH_{PS}} \right] (B_{PS})$$

$(CH_{PS})_F$ = number of faculty and staff children attending local public schools (same as in model G-1.4.1)

$(CH_{PS})_S$ = number of students' children attending local public schools (same as in model G-1.4.1)

CH_{PS} = total number of children attending local public schools (same as in model G-1.4.1)

B_{PS} = local governments' operating budgets for public schools

lege-related influences, $(OC_M)_{CR}$, to the total local government operating budget for such services, exclusive of public schools, B_M . (Both figures were used initially in model G-2.1.) Multiply this ratio by the value of all local government property, except public schools. The same operations are performed for public schools: the ratio of costs allocable to college-related persons to total local government operating budget is multiplied by the value of all local government property associated with public schools. These two property values allocable to the college, the one for municipal services and the other for public school services, are added to yield the total value of local government properties.

Real-Estate Taxes Foregone through the College's Tax-Exempt Status

Model G-4 estimates the value of property taxes that the college would pay if it were subject to such taxes on its currently exempt holdings or, in other words, the amount of taxes foregone by local governments as a result of the college's tax-exempt status. The key assumption behind this model is that the assessed value of the college's land would be similar to that of other land in the contiguous community. An alternative assumption would be that the college land might be developed in a fashion similar to that of properties contiguous to it. Of course, those properties have been influenced by the presence of the college. These are but two of several possible assumptions.

To obtain $(R_{FRE})_C$, multiply the total real-estate taxes paid to local governments by sources other than the

Model G-3

$$GP_{CR}$$

Value of Local Governments' Properties Allocable to
College-Related Portion of Services Provided

$$GP_{CR} = \left[\frac{(OC_M)_{CR}}{B_M} \right] (GP_M) + \left[\frac{(OC_{PS})_{CR}}{B_{PS}} \right] (GP_{PS})$$

$(OC_M)_{CR}$ = operating cost of government-provided municipal services allocable to college-related influences (model G-2.1)

B_M = local governments' operating budgets for all municipal services except public schools (same as in model G-2.1)

GP_M = value of all local government property except public schools

$(OC_{PS})_{CR}$ = operating cost of local public schools allocable to college-related persons (model G-2.2)

B_{PS} = local governments' operating budgets for public schools (same as in model G-2.2)

GP_{PS} = value of all local government property associated with public schools

college, $R_{RE} - (R_{RE})_C$, by the ratio of the college's geographical area to the geographical area of the local environment exclusive of the college. This yields, in effect, the value of taxes for college-related land. When the taxes, if any, actually paid by the college on its real property are deducted, the result is the amount the college would pay were it not for its tax-exempt status.

Value of Self-Provided Municipal-Type Services

Model G-5 is designed to indicate the value of municipal-type services provided by the college instead of or in addition to those provided by local government. These include services such as police and security, health and sanitation, street lighting, street maintenance, grounds maintenance, and education. The expenditures for such services can be recovered or estimated from the records of the college. Even assuming comparability in the quality of services, it is not certain that the expenditures by the college are equal to those that would be made by the municipal government.

INDIVIDUAL MODELS

The third sector of the community influenced by the presence of the college is the individual. Three models emerge in this area: model I-1 deals with the number of local jobs attributable to the presence of the college, model I-2 indicates the personal income of local individuals from

Model G-4

$$(R_{FRE})_C$$

Real-Estate Taxes Foregone through the
Tax-Exempt Status of the College

$$(R_{FRE})_C = [R_{RE} - (R_{RE})_C] \left(\frac{G_C}{G_L} \right) - (R_{RE})_C$$

R_{RE} = total real-estate taxes collected by local governments

$(R_{RE})_C$ = real-estate taxes paid to local governments by the college (model G-1.1.1)

G_C = geographical area of the college

G_L = geographical area of the local environment, exclusive of the college

Model G-5

$$(OC_M)_{SC}$$

Value of Municipal-Type Services
Self-Provided by the College

Obtain operating costs from the college records

- $(OC_M)_{SC}$ =
1. police and security services
 2. sanitation
 3. street lighting
 4. street maintenance
 5. other services

college-related jobs and business activities, and model I-3 considers durable goods procured with income from college-related jobs and business activities. These three models result in values that are not additive; that is, the number of jobs cannot be added to personal income, nor can either of these be added to durable goods.

Number of Local Jobs Attributable to the Presence of the College

Model I-1 uses the following logic: if total college-related expenditures (obtained for model B-1.1) are added to the operating costs of government-provided municipal and public school services allocable to college-related influences, the resulting sum will be the total local expenditures that can be associated with the college. If one then multiplies these expenditures by the number of full-time jobs per dollar of direct expenditures in the local environment, j , the number of local jobs created by college-related expenditures is obtained. This figure, added to the number of faculty and staff positions, yields the total number of local jobs attributable to the presence of the college.

It should be noted that it is unnecessary to consider in this model any jobs other than those resulting from first-round, direct expenditures. The multiplier effects discussed in appendix B are scaled to first-round expenditures and thus account for any impacts—in this case, jobs—that result from second-round and later expenditures.

Personal Income of Local Individuals from College-Related Jobs and Business Activities

Model I-2 expresses the total personal income of local individuals from college-related jobs and business activities. Two types of personal income are considered; the first is that of locally resident faculty and staff. This amount is obtained by multiplying the proportion of faculty and staff who reside locally by the gross compensation of all faculty and staff. Again the assumption is made that those who live in the college community have the same level of income as the average college employee. (Alternatively, one could multiply the total personnel expenditures of the college by the proportion of faculty and staff residing locally.)

The second type of personal income is that related to jobs, other than faculty and staff positions, attributable to the presence of the college. To obtain this figure, college-related expenditures (derived in model B-1.1) are multiplied by the local figure for payrolls and profits per dollar of local direct expenditures. As in model I-1, only local direct expenditures need be considered for p . Payrolls and profits per dollar of second- and later-round expenditures are taken into account by the multiplier effects discussed in appendix

Durable Goods Procured with Income from College-Related Jobs and Business Activities

The final model, I-3, indicates durable goods procured with income from college-related jobs and business activities.

The personal income of local individuals from college-related jobs and business activities (derived in model I-2) is multiplied by the proportion of total income typically used to purchase durable goods. The latter figure differs according to geographical region, type of community (urban or rural), and other factors. The director of this study should attempt to obtain from local sources a supportable value to be used.

Model I-1

$$J_L$$

Number of Local Jobs Attributable to the Presence of the College

$$J_L = F + (j) [(E_L)_{CR} + (OC_{M,PS})_{CR}]$$

- F = total number of faculty and staff
 j = full-time jobs per dollar of direct expenditures in the local environment
 $(E_L)_{CR}$ = college-related local expenditures (model B-1.1)
 $(OC_{M,PS})_{CR}$ = operating cost of government-provided municipal and public school services allocable to college-related influences (model G-2)

Model I-2

$$PI_{CR}$$

Personal Income of Local Individuals from College-Related Jobs and Business Activities

$$PI_{CR} = (f_L)(W_F) + (p)(E_L)_{CR}$$

- f_L = proportion of faculty and staff residing locally (see model B-1.1.2.1)
 W_F = gross compensation to faculty and staff
 p = payrolls and profits per dollar of local direct expenditures
 $(E_L)_{CR}$ = college-related local expenditures (model B-1.1)

Model I-3

$$DG_{CR}$$

Durable Goods Procured with Income from College-Related Jobs and Business Activities

$$DG_{CR} = (i)(PI_{CR})$$

- i = proportion of total income typically used to purchase durable goods
 PI_{CR} = personal income of local individuals from college-related jobs and business activities (model I-2)

CHAPTER FIVE

HOW TO WORK WITH THE MODELS

Chapter 4 traced the rationale of the economic impact models. In this chapter, procedures for making the calculations are suggested.

The present version of the models was the culmination of a developmental and heuristic process that took almost a year. Without doubt, further refinements can improve the consistency and scope of such economic impact studies. The building of any model, economic or otherwise, that seeks to simulate the real world is a continuing process of empirical study, construction, field testing and evaluation, and repeated refinement and revision. The particular variables employed and the sources of data explored represent present understanding, certainly not the ultimate in methodology. To assure a reasonably credible approximation of reality, the current models (and several of their predecessors) were tested using data from the Claremont Colleges.

The Claremont consortium is a multipurpose league of six colleges in the east San Gabriel Valley of Los Angeles County. The major facilities are in the city of Claremont, an upper-middle-class community of about 27,000 residents. The colleges include the Claremont University Center, Claremont Men's College, Harvey Mudd College, Pitzer College, Pomona College, and Scripps College.

Discussion of the Claremont data has been integrated with a more general discussion of data sources and computational approaches in order to serve two expository purposes. First, the actual figures obtained from Claremont suggest orders of magnitude, including relative quantities within models, and may help to confirm the reader's understanding. Second, and perhaps more important, the operational approaches to the calculations should be helpful to any institution attempting to use these models. It is important to stress that the nature of local data varies significantly from institution to institution. Thus a specific approach taken or assumption made in Claremont may not be appropriate at another institution. However,

the thought processes displayed should be of value in fostering understanding of what was intended in the models and perhaps in suggesting where assumptions may be modified to conform to particular situations.

The first half of this chapter presents a model-by-model summary of the critical variables and general sources of data for those variables, specific references to items in this chapter and in the appendixes intended to further understanding of the models and the methods of calculation, and the particular figure obtained from the studies in Claremont.¹ The second half of the chapter provides general discussions of the critical variables and gives examples, where relevant, from the Claremont calculations. Some data sheets used as aids to calculations are shown and, where specific questionnaire approaches are desirable, some guidance and assistance is provided.

An attempt has been made to make explicit every assumption employed in the calculations and to indicate any significant biases in those assumptions. It is impossible to develop a series of models without making judgments that could affect the results of the models' use. It is emphasized that any institution initiating a study must examine those judgments for their applicability to the particular situation; for example, for lack of interest or of obtainable data, some models may be omitted.

Model-by-Model Summaries

In the following material, where the source is indicated as local government, a variety of possible types—including municipal, district, county, or state—could be identified. The Claremont dollar figures are for 1965-68. More commonly, figures would be annual, except when a nine-month academic year is indicated.

1. In some models, figures obtained for each of the six colleges were summed to obtain the result shown. Some of the factors used to calculate those individual figures vary from college to college. In those cases an artificial average is displayed and noted. Calculations using that figure may not appear consistent with the final result.

VARIABLE	DATA SOURCES	DISCUSSION REFERENCE	RESULT OF CLAREMONT TEST
B-*, College-Related Local Business Volume	Sum of B-1.1, -1.2, -1.3		\$ 6,832,400
B-1.1. College-Related Local Expenditures	Sum of B-1.1.1, -1.1.2, -1.1.3, -1.1.4		\$ 3,832,400
B-1.1.1. Local Expenditures by the College			\$ 453,000
$(e_L)_C$ = proportion of total college expenditures, excluding compensation, internal items, and taxes, that are local	College records	p. 34	0.065 (average for six colleges)
E_C = total college expenditures	College records	p. 34	\$25,507,200
E_{NL} = college expenditures known to be nonlocal ^a	College records	p. 34	\$ 8,299,800
W_{FS} = Gross compensation to faculty, staff, and students	College records	p. 34	\$11,727,100
X_{FC} = Internal account transfers and payments	College records	p. 34	\$ 248,300
R_C = Taxes and other payments to governments	College records	p. 34	\$ 310,400
B-1.1.2. Local Expenditures by Faculty and Staff	Sum of B-1.1.2.1, -1.1.2.2, -1.1.2.3		\$ 2,318,000
B-1.1.2.1. Expenditures by Faculty and Staff for Local Rental Housing			\$ 630,000
f_L = proportion of faculty and staff residing locally	College records	p. 34	0.68 (average for six colleges)
f_H = proportion of local faculty and staff who rent housing	College records, local planning studies, U.S. Census of Population	34	0.315
DI_F = total disposable income of faculty and staff	College records	p. 34	\$ 9,364,000
e_H = proportion of a tenant's total expenditures likely to be spent for rental housing	Appendix A	p. 34	0.32
B-1.1.2.2. Local Nonhousing Expenditures by Local Faculty and Staff			\$ 1,517,000
f_L = proportion of faculty and staff residing locally	See model B-1.1.2.1		0.68 (average for six colleges)
e_L = proportion of total nonhousing expenditures that an individual is likely to make in his local environment	Appendix C		0.387
DI_F = total disposable income of faculty and staff	See model B-1.1.2.1		\$ 9,364,000
$(e_{NH})_F$ = proportion of a consumer's total expenditures spent on nonhousing items	Appendix A	p. 34	0.63
B-1.1.2.3. Local Expenditures by Nonlocal Faculty and Staff			\$ 171,000
f_L = proportion of faculty and staff residing locally	See model B-1.1.2.1		0.68 (average for six colleges)
F = total number of faculty and staff	College records	p. 34	1,068 persons
$(E_L)_F$ = estimated average local expenditures by each nonlocal faculty and staff person	Questionnaire or judgment	p. 34	\$ 500
B-1.1.3. Local Expenditures by Students	Sum of B-1.1.3.1, -1.1.3.2, -1.1.3.3, -1.1.3.4, -1.1.3.5		\$ 977,400
B-1.1.3.1. Local Miscellaneous Expenditures, Exclusive of Room and Board, by Students Obtaining Local Room and Board in Group Arrangements or with Parents			\$ 414,300
S_L = number of students obtaining local room and board from dormitories, fraternities, sororities, other groups, or parents	College records	p. 35	3,106 students

^aNot used in this study. See notes on model.

VARIABLE	DATA SOURCES	DISCUSSION REFERENCE	RESULT OF CLAREMONT TEST
$(E_m)_S$ = average expenditures, exclusive of room and board, per student of this type	Appendix D, college financial aid office, some judgment	p. 35	\$ 345
e_L = proportion of total expenditures, exclusive of room and board, that an individual is likely to make in his local environment	Appendix C		0.387
B-1.1.3.2. Expenditures by Students for Local Rental Housing			\$ 239,800
S_H = number of students renting local housing	College records	p. 35	530 students
$(E_h)_S$ = average rental housing expenditures per student	Appendixes D and E	p. 35	\$ 400 (average for six colleges)
B-1.1.3.3. Local Nonhousing Expenditures by Students Who Rent Local Housing			\$ 182,900
S_H = number of students renting local housing	See model B-1.1.3.2		530 students
$(E_{nh})_S$ = average nonhousing expenditures per student	Appendixes D and E	p. 35	\$ 835 (average for six colleges)
e_L = proportion of total nonhousing expenditures that a student is likely to make in his local environment	Appendix C		0.387
B-1.1.3.4. Local Expenditures by Nonlocal Students			\$ 140,400
S_{NL} = number of nonlocal students	College records	p. 35	624 students
$(E_l)_S$ = estimated average local expenditures by each nonlocal student	Questionnaire or judgment	p. 35	\$ 215 (average for six colleges)
B-1.1.3.5. Local Expenditures by Local Fraternities, Sororities, and Other Student Living Groups			Not applicable
$(E_{LGH})_S$ = expenditures by student living groups for local rental housing	Survey	p. 35	
$(e_{LGNH})_S$ = proportion of nonhousing expenditures made locally by local living groups	Survey	p. 35	
$(E_{LGO})_S$ = total operating and food expenditures of local living groups	Survey	p. 35	
B-1.1.4. Local Expenditures by Visitors to the College			\$ 84,000
V_n = estimated number of visits to the college by visitors in the n^{th} category	College records, other sources, some judgment	p. 35	
$(E_n)_V$ = Estimated local expenditures by each visitor in the n^{th} category during each visit to the college	College records, other sources, some judgment	p. 36	
B-1.2. Purchases from Local Sources by Local Businesses in Support of Their College-Related Business Volume			\$ 2,250,000
m_p = coefficient representing the degree to which local businesses purchase goods and services from local sources	Appendix B		0.60
$(E_L)_{CR}$ = college-related local expenditures	Model B-1.1		\$ 3,742,400
B-1.3. Local Business Volume Stimulated by the Expenditure of College-Related Income by Local Individuals Other Than Faculty, Staff, or Students			\$ 750,000
m_i = coefficient representing the degree to which individual income received from local business activity is spent and respent locally	Appendix B		0.20

VARIABLE	DATA SOURCES	DISCUSSION REFERENCE	RESULT OF CLAREMONT TEST
$(E_L)_{CR}$ = college-related local expenditures	Model B-1.1		\$ 3,742,400
B-2. Value of Local Business Property Committed to College-Related Business	Sum of B-2.1, -2.2, -2.3		\$ 4,160,000
B-2.1. Value of Local Business Real Property Committed to College-Related Business			\$ 3,350,000
BV_{CR} = college-related local business volume	Model B-1		\$ 6,742,400
BV_L = local business volume	U.S. Census Bureau	p. 36	\$45,000,000
V_B = assessed valuation of local business real property	Local government	p. 36	\$ 4,441,100
amv = local ratio of assessed value to market value of taxable real property	Local government	p. 36	0.20
B-2.2. Value of Local Business Inventory Committed to College-Related Business			\$ 810,000
ibv = inventory-to-business-volume ratio	Appendix F		0.12
BV_{CR} = college-related local business volume	Model B-1		\$ 6,742,400
B-2.3. Value of Local Business Property, Other Than Real Property and Inventory, Committed to College-Related Business			Not available
OP_n = value of local-business property, other than real property and inventory, of the n^{th} enterprise	Survey	p. 36	
BV_n = business volume of the n^{th} enterprise	Survey	p. 36	
BV_{CR} = college-related local business volume	See model B-1		\$ 6,742,400
BV_L = local business volume	See model B-2.1		\$45,000,000
B-3. Expansion of the Local Banks' Credit Base Resulting from College-Related Deposits			\$ 6,165,000
t = local time-deposit reserve requirement	Federal Reserve Board	p. 36	0.03
TD_C = average time deposit of the college in local banks	College records	p. 36	\$ 3,500,000
TD_F = average time deposit of each faculty and staff person in local banks	Appendix G		\$ 1,352
F = total number of faculty and staff	See model B-1.1.2.3		1,068 persons
TD_S = average time deposit of each student in local banks	Appendix G		\$ 34
S = total number of students	College records	p. 36	4,260 students
d = local demand-deposit reserve requirement	Federal Reserve Board	p. 36	0.165
DD_C = average demand deposit of the college in local banks	College records	p. 36	\$ 700,000
DD_f = average demand deposit of each faculty and staff person in local banks	Appendix G		\$ 277
DD_s = average demand deposit of each student in local banks	Appendix G		\$ 50
cbv = cash-to-business-volume ratio	Appendix F		0.037
BV_{CR} = college-related local business volume	Model B-1		\$ 6,742,400
B-4. Local Business Volume Unrealized because of the Existence of College Enterprises			\$ 4,311,000
$(IBV)_C$ = income received by the college from the operation of local and on-campus college-owned business enterprises	College records	p. 36	\$ 4,311,000
G-1. College-Related Revenues Received by Local Governments	Sum of G-1.1, -1.2, -1.3, -1.4		\$ 338,300
G-1.1. College-Related Real-Estate Taxes Paid to Local Governments	Sum of G-1.1.1, -1.1.2, -1.1.3, -1.1.4		\$ 227,000
G-1.1.1. Real-Estate Taxes Paid to Local Governments by the College			\$ 99,000
$(RE)_C$ = real-estate taxes paid to local governments by the college	College records	p. 36	

VARIABLE	DATA SOURCES	DISCUSSION REFERENCE	RESULT OF CLAREMONT TEST
G-1.1.2. Real-Estate Taxes Paid to Local Governments by Local Faculty and Staff			\$ 82,000
F_L = number of faculty and staff residing locally	College records	p. 37	685 persons
f_H = proportion of local faculty and staff who rent housing	See model B-1.1.2.1		0.315
pt = local property tax rate	Local government	p. 37	0.0695
V_{PR} = total assessed valuation of all local private residences.	Local government	p. 37	\$15,500,000
N_{PR} = total number of local private residences	Local government	p. 37	4,849 residences
G-1.1.3. Real-Estate Taxes Paid to Local Governments by Local Fraternities, Sororities, and Other Student Living Groups			Not applicable
$(R_{RE})_{Sn}$ = real-estate taxes paid to local governments by local student living groups in the n^{th} category	Survey	p. 37	
G-1.1.4. Real-Estate Taxes Paid to Local Governments by Local Businesses for Real Property Allocable to College-Related Business			\$ 46,000
pt = local property tax rate	See model G-1.1.2		0.0695
BV_{CR} = college-related local business volume	Model B-1		\$ 6,742,400
BV_L = local business volume	See model B-2.1		\$15,000,000
V_B = assessed valuation of local business	See model B-2.1		\$ 4,441,100
G-1.2. College-Related Property Taxes, Other Than Real-Estate, Paid to Local Governments	Sum of $(R_{NRE})_C$ and G-1.2.1, -1.2.2, -1.2.3		
$(R_{NRE})_C$ = inventory and other nonreal-property taxes paid to local governments by the college	College records	p. 37	\$99,000
G-1.2.1. Nonreal-Property Taxes Paid to Local Governments by Local Faculty and Staff			Not available
F_L = number of faculty and staff residing locally	See model G-1.1.2		685 persons
R_{OP} = total property taxes for other than real estate or inventories paid to local governments	Local government	p. 37	Not available
T_C = total number of local households	Local government	p. 37	Not available
G-1.2.2. Nonreal-Property Taxes Paid to Local Governments by Local Fraternities, Sororities, and Other Student Living Groups			Not applicable
$(R_{NRE})_{Sn}$ = nonreal-property taxes paid to local governments by the n^{th} local student living group	Survey	p. 37	
G-1.2.3. Inventory and Other Nonreal-Property Taxes Paid to Local Governments by Local Businesses for Assets Allocable to College-Related Business			Not available
it = local inventory tax rate	Local government	p. 37	Not available
$(IB)_{CR}$ = value of local business inventory committed to college-related business	Model B-2.2		\$ 810,000
ot = local property tax rate for other than real estate or inventories	Local government	p. 37	Not available
$(OP)_{CR}$ = value of local business property, other than real property and inventory, committed to college-related business	Model B-2.3		Not available
G-1.3. Sales Tax Revenue Received by Local Governments as a Result of College-Related Local Purchases			\$ 4,300
st_{LG} = proportion of sales tax retained by local governments	Local government	p. 37	0.20

VARIABLE	DATA SOURCES	DISCUSSION REFERENCE	RESULT OF CLAREMONT TEST
ST = total sales tax collected locally	College records, local government	p. 37	\$ 144,191
BV _{CR} = college-related local business volume	Model B-1		\$ 6,742,400
BV _L = local business volume	See model B-2.1		\$45,000,000
G-1.4. State Aid to Local Governments Allocable to the Presence of the College	Sum of (R _A) _{PC} and G-1.4.1		Not available
(R _A) _{PC} = other state aid received by local governments on a per capita, service-unit, or tax-unit basis and influenced by the presence of the college, e.g., gasoline tax allocations, road maintenance subsidies (established on the basis of local conditions)	Local government	p. 37	Not available
G-1.4.1. State Aid to Local Public Schools Allocable to Children of College-Related Families			\$ 107,000
A _{PS} = total state aid to local public schools	Local school districts	p. 37	\$ 1,708,447
(CH _{PS}) _F = number of faculty and staff children attending local public schools	Appendix H		434 children
(CH _{PS}) _S = number of students' children attending local public schools	Appendix H		9 children
CH _{PS} = total number of children attending local public schools	Local school districts	p. 37	7,110 children
G-1.5. Other College-Related Revenues Collected by Local Governments			Not available
(R _Q) _{CR} = other college-related revenues collected by local governments	College records, local government	p. 37	
G-2. Operating Cost of Government-Provided Municipal and Public School Services Allocable to College-Related Influences	Sum of G-2.1 and -2.2		\$ 726,000
G-2.1. Operating Cost of Government-Provided Municipal Services Allocable to College-Related Influences			\$ 458,000
F = total number of faculty and staff	See model B-3		1,068 persons
S = total number of students	See model B-3		4,260 students
POP _{LD} = total local daytime population	U.S. Census Bureau, local government	p. 37	19,493 persons
FH _L = total number of persons in local faculty and staff households	College records or questionnaire	p. 37	2,040 persons
SH _L = total number of persons in local student households	College records or questionnaire	p. 37	3,691 persons
POP _{LR} = total local resident population	Local government, U.S. Census of Population	p. 38	24,294 persons
B _M = local governments' operating budgets for all municipal services except public schools	Local government	p. 38	\$ 1,834,416
G-2.2. Operating Cost of Local Public Schools Allocable to College-Related Persons			\$ 268,000
(CH _{PS}) _F = number of faculty and staff children attending local public schools	See model G-1.4.1		434 children
(CH _{PS}) _S = number of married students' children attending local public schools	See model G-1.4.1		9 children
CH _{PS} = total number of children attending local public schools	See model G-1.4.1		7,110 children
B _{PS} = local governments' operating budgets for public schools	Local government	p. 38	\$ 4,325,357
G-3. Value of Local Governments' Properties Allocable to College-Related Portion of Services Provided			\$ 443,000
(OC _M) _{CR} = operating cost of local government-provided services allocable to college-related influences	Model G-2.1		\$ 458,000

VARIABLE	DATA SOURCES	DISCUSSION REFERENCE	RESULT OF CLAREMONT TEST
B_M = local governments' operating budgets for all municipal services except public schools	See model G-2.1		\$ 1,834,416
GP_M = value of all local government property except public schools	Local government	p. 38	\$ 51,050
$(OC_{PS})_{CR}$ = operating cost of local public schools allocable to college-related persons	Model G-2.2		\$ 268,000
B_{PS} = local governments' operating budgets for public schools	See model G-2.2		\$ 4,325,357
GP_{PS} = value of all local government property associated with public schools	Local government	p. 38	\$ 6,960,000
G-4. Real-Estate Taxes Foregone through the Tax-Exempt Status of the College			\$ 61,000
R_{RE} = total real-estate taxes collected by local governments	Local government	p. 38	\$ 698,681
$(R_{RE})_C$ = real-estate taxes paid to local governments by the college	Model G-1.1.1		\$ 99,000
G_C = geographical area of the college	Local planning department, college records	p. 38	295 acres
G_L = geographical area of the local environment exclusive of the college	Local planning department	p. 38	4,455 acres
G-5. Value of Municipal-Type Services Self-Provided by the College			\$ 107,000
$(OC_M)_{SC}$ = 1. Police and security services 2. Sanitation 3. Street lighting 4. Street maintenance 5. Other services	College records	p. 38	
I-1. Number of Local Jobs Attributable to the Presence of the College			1,470 jobs
F = total number of faculty and staff positions	See model B-3		1,068 jobs
j = full-time jobs per dollar of direct expenditures in the local environment	Appendix B		.00009
$(E_L)_{CR}$ = college-related local expenditures	Model B-1.1		\$ 3,742,400
$(OC_{M,PS})_{CR}$ = operating cost of government-provided municipal and public school services allocable to college-related influences	Model G-2		\$ 726,000
I-2. Personal Income of Local Individuals from College-Related Jobs and Business Activities			\$ 9,975,000
f_L = proportion of faculty and staff residing locally	See model B-1.1.2.1		0.68 (average for six colleges)
W_F = gross compensation to faculty and staff	College records	p. 38	\$11,727,144
p = payrolls and profits per dollar of local direct expenditures	Appendix B		0.66
$(E_L)_{CR}$ = college-related local expenditures	Model B-1.1		\$ 3,742,400
I-3. Durable Goods Procured with Income from College-Related Jobs and Business Activities			\$ 299,000
i = proportion of total income typically used to purchase durable goods	Appendix I		0.03
PI_{CR} = personal income of local individuals from college-related jobs and business activities	Model I-2		\$ 9,975,000

Discussion of Critical Variables

Model B-1.1.1

$(e_L)_C$ This factor can be obtained from a sampling study of vendor purchases analyzing the amounts paid to local vendors. In Claremont, every twentieth vendor (i.e., a 5 percent sample), his location, and the amount of his receipts were recorded separately for each college from the colleges' bank reconciliations and the accounts-payable check registers. Excluded from the sample were (a) intercollege payments and transfers; (b) taxes; (c) fellowships and stipends; (d) refunds; (e) insurance payments; (f) annuity payments; (g) checks issued on temporary vendor numbers, primarily reimbursements for travel expenses, meals, and other one-time expenditures; (h) honorariums; (i) utility payments; (j) construction costs; and (k) payments to concessions, various campus eating establishments run on a concession basis. From the sampling, the percentages of the totals that went to local vendors were calculated on the basis of dollar volume, giving the value of $(e_L)_C$ separately for each college.

E_C In Claremont, the operating expenditures were taken from the annual financial reports of the colleges for 1967-68. The total includes both operating expenditures and plant-fund expenditures; however, the plant-fund expenditures are also part of E_{NL} below.

E_{NL} Many expenditure items are entirely or partly nonlocal expenditures; for example, (a) plant-fund expenditures, (b) purchase of library books, (c) insurance payments, and (d) faculty travel and moving expenses. All of these were found in the annual financial reports.

$W_{F,S}$ At some cost centers, wages and salaries are clearly stated in financial reports, but often the expenditure appears as a combination of salaries and other expenses, e.g., equipment and materials. Such items were broken down accordingly (after suggestions from Claremont accounting personnel and added under the appropriate category. For example, an expenditure item appearing as student health service expense was taken as 74 percent wages and salaries and 26 percent other expenditures. Some other examples are:

	% Salaries ^a	% Other Expenses
Business Office	74	26
Office of Provost	65	35
Counseling Center	81	19
Campus Security	81	19
Telephone	49	51
Heating Plant	62	38
Library	77	23
General Building Maintenance ^b		

^aPercentage of salaries in total joint service budget, based on 100 percent of salaries, 80 percent of custodian and groundsman charges (to deflate standard rate to eliminate fringe benefits), and 86 percent of maintenance costs.

^bRatio of total shop wages paid to sum of shop wages and materials issued.

XF_C The account transfers reflect the institution's internal payments. For example, a tuition refund may be considered an account transfer; a payment from one college to another would be another example. At Claremont, these were computed from the financial reports.

R_C This includes all taxes and other payments to the local, state, and federal governments that appear in the financial reports; e.g., sewer tax or social security tax.

Model B-1.1.2.1

f_L At Claremont, this factor was obtained from a car-use survey conducted by Robert E. Alexander, FAIA, and Associates for the Claremont Colleges in June 1968.

f_H This factor was obtained from the Claremont Department of Planning and Community Development data sheet that describes the population characteristics of Claremont as of 1965. It was assumed that the living pattern of the members of faculty and staff, i.e., whether they rent or own houses, was the same as that of all residents of Claremont; however, since faculty and staff have relatively higher or more stable incomes, more of them may own houses, and the factor used may be on the high side.

DI_F The gross wages and salaries paid to faculty and staff were computed from colleges' financial reports. It has been assumed that, on the average, the tax deductions (and other deductions) are 20 percent of the total. The disposable income was taken to be equal to gross wages and salaries less those deductions.

e_H This value and that of $(e_{NH})_F$ in model B-1.1.2.2 were obtained from the 1967 Bureau of Labor Statistics report *Three Standards of Living for an Urban Family of Four Persons*. This report, revised annually, lists three levels of annual costs per family in a number of metropolitan areas and nonmetropolitan regions in the United States. A college conducting an impact study can select the report most relevant to the college's location. Appendix A presents a set of sample calculations obtaining the values of e_H and $(e_{NH})_F$ for Detroit.

Model B-1.1.2.3

F This number should be available from the college's personnel records. At Claremont, it was obtained from the previously mentioned car-use survey.

$(E)_F$ For Claremont, this number was taken to be \$500 a year, based on the assumption that a nonresident member of the faculty or

staff would spend about \$10 a week in Claremont. If more accuracy is desired, this information can be obtained in a sampling study using a questionnaire similar to that in appendix L.

Model B-1.1.3.1

S_L This information is usually available from student registration records. There are no fraternities or sororities at the Claremont Colleges. Each of the six was tallied to find (a) place of residence of students, (b) marital status of students, and (c) place of origin of students (whether from Claremont; Los Angeles, Orange, Riverside, or San Bernardino counties; other California counties; or outside California).

$(E_m)_S$ Except for those in dormitories, all students living in Claremont were assumed to be in rented housing. A figure of \$345 was provided by the director of admissions at Pitzer College. Typical data for other locations are given in appendix D.

Model B-1.1.3.2

S_H This information can be obtained from the same college sources as S_L , model B-1.1.3.1. For Claremont, a student telephone directory was also used.

$(E_h)_S$ Appendix E lists the average per capita expenditures for rental housing. These values were computed from *Three Standards of Living for an Urban Family of Four Persons* by taking one-third of the rental-costs figure. The figure used for most of the Claremont Colleges was taken from the lowest living standard in the Los Angeles-Long Beach area. For Claremont University Center, the median living standard was used because graduates were assumed to spend more.

Model B-1.1.3.3

$(E_{nh})_S$ See appendix E. These figures were computed from the same source as $(E_h)_S$, model B-1.1.3.2. Nonhousing expenditures are defined as cost of budget for renter families less personal taxes, social security and disability payments, life insurance, medical insurance, and housing. For the Claremont calculations, however, the computed tables (appendix E) were not used directly. Because of its remote location, Claremont was considered to be even lower in nonhousing expenditures, and the figures used were based on two items. Food expenses were computed as one-third of the four-person amount in the lower living standard (\$470), except for Claremont University Center, where the median figures were used. Other nonhousing expenditures for a nine-month academic year were taken

from an estimate by college staff as \$345. For most of the colleges, then, the total nonhousing expenditure was \$815.

Model B-1.1.3.4

S_{NL} This figure was obtained with S_L and S_H , models B-1.1.3.1 and B-1.1.3.2.

$(E_l)_S$ This was assumed to be one-fourth of a student's total nonhousing expenditures.

Checking model B-1.1.3.3, one sees that the value of $(E_{nh})_S$ is \$815. Therefore, $(E_l)_S = \$815/4 = \$205$ a year. If greater accuracy is required, a sampling survey can be conducted using the questionnaire in appendix L.

Model B-1.1.3.5

The information required for this model is conveniently obtained only by survey. A list of student living groups can ordinarily be obtained from college and student records. It is recommended that the various groups be put in three to five categories and that a telephone survey of a sample in each category be conducted. Survey questions are suggested in appendix M, and that appendix indicates which questions relate to the three variables in the model.

Model B-1.1.4

Chapter 4 lists several categories of visitors. In the Claremont example, only two types, visitors to students and visitors to events, were considered.

The visitors-to-students category was further divided into two subcategories, visitors who stay overnight and those who do not. It was assumed that overnight visits would entail an average stay of three days per visitor at an average expense of \$20 per day per visitor. For visitors who do not stay overnight, an average expense of \$10 per day per visitor was assumed. It was further assumed that there is an average of 1.5 visitors per student per year and that about one-half of the freshmen and seniors receive visitors.

In Claremont, 1,037 students were assumed to have received visitors. Since 396 students came from nearby locations, it was assumed that visitors to the remaining 641 would stay overnight. The calculations follow:

$$\begin{aligned}\text{Overnight expenditures} &= 641 \times 1.5 \times 3 \times \$20 \\ &= \$57,600\end{aligned}$$

$$\text{Day-visit expenditures} = 396 \times 1.5 \times \$10 = \$5,940$$

$$\begin{aligned}\text{Total expenditure by visitors to students} &= \$57,600 \\ &+ \$5,940 = \$63,540\end{aligned}$$

Information on visitors to events is a bit less difficult to obtain. In Claremont, the total income from auditorium and theater events for the first six months of

1968-69 was \$62,828, as given in the budget summary sheets of the Claremont Colleges. Assuming that the colleges received the same amount for the second half of 1968-69, the total income for one year equaled \$125,656. If it is further assumed that the average cost of one ticket was \$2.50, the total attendance for all events would be $\$125,656/\$2.50 \cong 50,000$ persons.

The geographical breakdown of season-ticket holders was estimated by the coordinator of auditorium and theater events as 60 percent from Claremont and the rest from elsewhere. Assuming the same breakdown for all persons attending events, 20,000 people could be classified as visitors. It was assumed that one-third of the 20,000 visitors spent an average of \$3 in the community. Thus, total expenditure approximates $20,000/3 \times \$3 = \$20,000$.

Total expenditure by all visitors $\cong \$63,540 + \$20,000 \cong \$83,540$.

Model B-2.1

BV_L According to the 1963 *Retail Trade Area Statistics and Selected Services: Area Statistics of California Counties and Cities*, the total retail sales in Claremont plus total receipts of all establishments were \$16,396,000. According to the U.S. Bureau of the Census publication *Census of Manufacturing, 1963*, the annual volume of manufacturing businesses was \$3,900,000. From the *Census of Business, 1963*, \$10,726,000 was found to be the wholesale trade volume. Total 1963 business volume in Claremont was thus $\$16,396,000 + \$3,900,000 + \$10,726,000 = \$31,022,000$.

To update these figures from 1963 to 1968, a ratio of the government's total sales tax receipts was used. For 1963, receipts were \$99,530. For 1967-68, the sales tax receipts totaled \$144,191. Thus, $BV_L = \$31,022,000 \times \$144,191/\$99,530 = \$45,000,000$.

V_B The assessed valuations of all the property in Claremont, developed and undeveloped, were given in the *Land Use Survey, 1967-68*, of the Claremont Department of Planning and Community Development. The following data-sheet format was used to tabulate the values required in several

related models. It should be noted that some judgment was required to assign the land uses to the appropriate model categories.

amv

This figure was obtained from Claremont's assistant planner. Usually, it is easily obtained from the offices of local and county assessors.

Model B-2.3

OP_n & BV_n

These factors are not readily estimated except by use of a sampling survey, as described in appendix N. In the limited Claremont test, no such data were collected.

Model B-3

t & d

These were obtained from a January 1969 *Federal Reserve Bulletin* article, "Reserve Requirements of Member Banks."

TD_C & DD_C

Average 1967-68 values were provided by the controller of the Claremont Colleges.

S

The total number of students was obtained from the tally of students of Claremont Colleges previously mentioned.

Note that the above figures represent average amounts for a period of one year.

Model B-4

(I_{BV})_C

For each of the six Claremont Colleges, this figure was obtained from the 1967-68 financial reports. The amount was listed as income received from the operation of auxiliary enterprises, e.g., dormitories, dining halls, college union, and bookstore.

Model G-1.1.1

(R_{RE})_C

For each of the six colleges, this value was computed from the annual financial reports and was found listed under such headings as Campus Property Taxes.

Data sheet for property values				
VALUE OF EDUCATIONAL PROPERTY	VALUE OF GOVERNMENT PROPERTY	VALUE OF BUSINESS PROPERTY	VALUE OF RESIDENTIAL PROPERTY	VALUE OF UNDEVELOPED PROPERTY
\$15,924,605	\$51,050	\$4,441,130	\$15,500,000	\$21,044,755

Model G-1.1.2

F_L Same source as f_L , model B-1.1.2.1.
 f_H See model B-1.1.2.1.
 pt This rate was obtained from *Tax Bills for 1967-68* issued by the county assessor's office and was taken as the rounded sum of tax rate for Claremont (1.6815 percent) and for Unified Schools (5.2700 percent): $1.6815\% + 5.2700\% = 6.9515\% = .0695$

V_{PR} The value of all developed residential property in Claremont was sampled on a data sheet (see procedures for obtaining the value of V_B in model B-2.1), and the value was tabulated to be \$15,500,000.

N_{PR} This figure was obtained from the Department of Planning and Community Development data sheets in "Area of Land by Land Use: City of Claremont, 1968."

Model G-1.1.3

$(R_{RE})_{Sn}$ There are no local fraternities or sororities in Claremont. For a college where such living groups do exist, the information will best be obtained from a sampling survey. The recommended procedure is described in appendix M.

Model G-1.2

$(R_{NRE})_C$ The college's financial reports should be the major source for this item if it is specifically called out. In Claremont no separate information was available. Any amounts were included in the taxes found in G-1.1.1.

Model G-1.2.1

$R_{OP} \& T_C$ This information should be obtainable from the appropriate municipal or county agency. In Claremont no information was available.

Model G-1.2.2

$(R_{NRE})_{Sn}$ Information can be obtained from the same survey as $(R_{RE})_{Sn}$, model G-1.1.3., as described in appendix M.

Model G-1.2.3

it & ot These usually have the same source as pt , model G-1.1.2. In the case of Claremont, they were not available directly, and this submodel was not used.

Model G-1.3

st_{LG} This figure was obtained from the Claremont Planning Department.
 ST This was obtained from the published Claremont annual budget.

Model G-1.4

$(R_A)_{PC}$ This set of factors must be obtained from the various local governments involved in a particular college area. There are no standard figures or approaches that can be noted here. In the Claremont test, we ignored this set because data were not readily available.

Model G-1.4.1

A_{PS} This value was obtained from the *Annual Report of Financial Transactions Concerning School Districts of California, Fiscal Year 1966-67*.

CH_{PS} The average daily attendance in the Claremont public schools was listed as 7,110 in the *Annual Report of Financial Transactions Concerning School Districts of California, Fiscal Year 1966-67*.

Model G-1.5

$(R_Q)_{CH}$ This information must be obtained primarily from college financial reports. No such data were available in Claremont.

Model G-2.1

POP_{LD} The 1968 California controller estimate for Claremont population was 24,294, according to January 1969 data sheets of the Claremont Department of Planning and Community Development. The *U.S. Census of Population Characteristics* reported 8,740 persons who were residents of Claremont and employed in Claremont or elsewhere. From the 1968 Claremont data sheets on city employment, the total number of employees in Claremont was 3,939. Therefore, $POP_{LD} = 24,294 - 8,740 + 3,939 = 19,493$.

FH_L There were 685 local faculty and staff members, 82 percent of whom were married (indicated in the previously mentioned tally of faculty and staff). Therefore, $.82 \times 685 = 562$ spouses. 562×1.41 children per couple = 793 children. $FH_L = 685 + 562 + 793 = 2,040$.

SH_L Total number of resident students was 3,636. The tally showed 35 students were married and lived locally. Their children = $35 \times .57$ children per couple = 20. $SH_L = 3,636 + 35 + 20 = 3,691$.

Alternately, both FH_L and SH_L may need to be obtained from questionnaires such as that in appendix L.

POP_{LR} Population was obtained from the 1968 California controller estimate published by the Claremont Department of Planning and Community Development.

B_M This figure was from the Claremont annual budget, 1968-69.

Model G-2.2

B_{PS} This figure was from the *Annual Report of Financial Transactions Concerning School Districts of California, Fiscal Year 1966-67*.

Model G-3

GP_M See data sheet for V_B , model B-2.1.

GP_{PS} On the V_B data sheet in model B-2.1, the value of all educational property is listed as \$15,924,605. On the data sheets of the Department of Planning and Community Development published in "Area of Land by Land Use: City of Claremont, 1968," the area of all educational property is

listed as 523.5 acres. The area of nursery, primary, and secondary schools is 228 acres. Therefore, value of GP_{PS} was estimated to be $\$15,924,605 / 523.5 \times 228 = \$6,960,000$.

Model G-4

R_{RE} This value was obtained from the City of Claremont annual budget.

G_C & G_L The areas were found on data sheets of the Department of Planning and Community Development in the 1968 "Area of Land by Land Use."

Model G-5

The data sheet for tabulating information from the various colleges is shown below. The values were extracted from the annual financial reports of the Claremont Colleges.

Model I-2

W_F This figure was included in the annual financial reports of Claremont Colleges.

Data sheet for self-provided services					
SERVICE COLLEGE	POLICE, SECURITY	SANITATION	STREET MAINTENANCE	OTHER	TOTAL
Claremont University Center	\$10,075		\$3,846		
Scripps College	\$18,036				
Claremont Men's College	\$16,434				
Harvey Mudd College	\$ 7,184				
Pitzer College	\$10,571				
Pomona College	\$35,061		\$5,838		
Total	\$97,361		\$9,684		\$107,045

CHAPTER SIX

PLANNING AND REPORTING THE STUDY

The motive to undertake an economic impact study will vary from one institution to another. The study may represent an attempt to counter local criticism or to determine whether to ask the institution to pay taxes. It may be needed in deciding whether to move an institution, to expand it locally, to found a new branch, to acquire lands, or to apply for a charter for a new college. There is nothing to prevent a group of citizens from conducting such a study on their own, though they will have a much easier time of it if the college opens its records to them and joins in a cooperative effort.

It is probably not overstating the case to say that the best time to originate such a study is when it is not needed, i.e., when there is sufficient leisure or relief from immediate pressure to do it well. If information is available, even for a prior year, it may be easier to introduce that data than to round up figures in the heat of a controversy or in the face of the need to make a sudden decision about policy. Routine gathering of such information makes similar actions seem less defensive in the face of a storm. In any case, since the study will require cooperation of many people, authority to conduct it should stem from the office of the institution's chief executive officer and have the approval of the governing board.

Responsibility for the Study

Responsibility for conducting the study should be assigned to a single person, whether or not he is to be assisted by an advisory committee and/or a staff. Whether the study is to be done by the college or by an outside agency must be determined on the merits of the alternatives. If the college's staff is small or lacks the requisite skills, or if the results will be more acceptable if the work is done by a more objective consulting firm, the work should be farmed out.

An advisory committee will be needed for communication as well as for advice. Conduct of the study is bound to attract attention and to create some annoyance or trouble to those being asked to supply information; the committee can help the academic and local community understand the nature and purpose of the study. Committee members can also suggest sources of data and

in many cases may be able to supply it themselves. It seems highly desirable to include on such a committee some well-known and/or knowledgeable citizens from the local community, including one or two who might initially be skeptical about the probable results.

Announcing and Reporting the Study

Because of the difficulty of interpreting the data until all the needed facts have been gathered and analyzed, it is important to suggest that preliminary reports be avoided. The interpretation of the results, no matter how objective the procedures used to obtain them, may result in controversy. The means by which the results are interpreted and displayed will thus deserve careful consideration of local interests and lines of communication.

Both in announcing the initiation of the study and in reporting its results, great care should be given to explanation of intention, that is, to some indication of what will be done with the results. (This is another argument for doing such a study before it is needed to settle a dispute.) If some decision must be made about campus location or planning or about the founding of a new institution or branch, the purpose will be obvious. But other purposes might include improvement of public relations (frankly admitted as a goal), determination of whether the institution is carrying its fair share of the local government burden, or preparation of memorial reports for anniversaries.

In announcing the results, care should be given to preparation of displays that will communicate the essentials in nontechnical and concise form. Graphs, charts, dollar stacks, or other graphic devices might be used. Most people will be impatient with too much detail; they will want to know, by and large in rather simple-minded terms, whether the community is gaining or losing. The occasion of a report can be educational. The community can understand, as a result, that there is no single index of measured impact, and it can be demonstrated that the assessment is complex. A mere enumeration of the factors taken into account will itself be impressive and perhaps even persuasive.

One aspect of the credibility and usefulness of the study will depend on the credibility of the initial deci-

sions regarding the definition of the boundaries of the community on which the impact is to be estimated. Obviously, in a city like New York or Chicago, it may never be possible to win general agreement on a definition of the boundaries of influence. However, in the majority of cases, it will be possible to draw sensible and generally acceptable boundaries. At any rate, the assumptions made in drawing the boundaries must be explicit. Even in a large urban or metropolitan suburban area, there will be some natural boundaries that will reduce the number of sensitive or controversial decisions to be made. Such natural boundaries include lakes, bays, and rivers; major freeways; mountains; state and county lines; parks or unused tracts of land; major railroad lines. Many boundaries will be legal—the lines separating tax and other jurisdictions. In some cases, the actual influence of an institution may extend past apparently logical barriers or fall short of them.

Even though there will seldom be an ideal or unarguable decision about all boundaries, it is important that such definitions be acceptable and credible to most of those whose interests will be affected by the study or its results. If extensive difference of opinion seems likely, it might be sensible to display maps showing the proposed bounds within which the study is to be kept and to invite commentary at public meetings, in the press, or in person.

Finally, the report of the results should include concise, but complete, mention of all that the study cannot account for—the intangibles and the qualitative variables. Some of the latter can be quantified, but not in dollars. If the institution has presented plays and concerts, for example, how many? How many people attended campus events during a year? Attention frequently may be drawn to the campus's function as a green space, as a park, playground, or garden. The response of the campus community to local charities, fund drives, and other civic betterment programs should be evaluated. How many from the local community were affected by campus hospitals or clinics, swimming pools, cultural and athletic events, museums, fairs, or exhibitions?

In all cases, it will add to the credibility of the study if negative findings are not brushed aside. One hopes there will not be too many of these; if there are, they should be squarely faced. An honest study is bound to unearth some problems. So much the better for the confidence of the community.

Economic Impact in Urban Areas

During planning or report preparation, the impact of a college on a community sometimes will be, or will seem, obvious. This is the case, for example, when a new institution or branch is established in a depressed neighborhood. Even though new campuses may bring new problems, so that the choice of location must be made with

care, there are examples of highly successful campus-city cooperation and beneficial impact. Since it is quite natural for those making site choices to seek out pleasant places or to flee the ghetto, one asks, Why place a college or branch in an already crowded city, particularly in a declining area? Some possible responses follow:

1. In the case of commuter colleges, a central location may be easier and cheaper for students to reach by public transportation, thus cutting down on the number of automobiles and on parking problems. (An urban university is sometimes half-seriously described as one that has a parking problem. Most urban, or downtown, institutions, however, can be reached from a wide area by public transportation.)
2. Such property is sometimes easier and cheaper to acquire and develop than is property in "more desirable" locations.
3. In distressed areas, the exercise of eminent domain may be less likely to stimulate opposition than in areas where land has valuable, particularly commercial, alternate uses.
4. Establishment of an institution in a blighted area may attract public funds for local community development.
5. The presence of the college may attract new business investments. In some cases, outstanding developments resulted as businesses were established to serve the college or to use college students as part-time labor. In one city, for example, a large insurance company built a high-rise office building across the street from a new campus; it wanted to participate in what it felt would be an increasingly attractive neighborhood development and to gain the advantage of access to research facilities and personnel.
6. Increase in business and other activity in the neighborhood can improve the tax yield on land and income. The in-lieu-of taxes paid by the college may be greater than the tax yield of the previously distressed area, though the college may remove some land from the tax roll. Some study must be devoted to changes in the tax yield from the taxable lands and enterprises adjoining the college.

It should also be noted that locating a new institution in a poor area may displace families and cause resentment. Such developments must be very carefully handled and coordinated, as the sad experiences of many cities have indicated.

Individual instances and anecdotes may have a powerful impact in the report of an economic impact study. Logically or not, such stories are sometimes more persua-

sive than statistics. For example, in one city one of the failing businesses in a declining neighborhood was a large hotel. After a new campus developed nearby, the hotel converted itself to commercial dormitory space, is now full, and has a waiting list. Such success also creates jobs and increases tax revenues.

Tax Revenue

Do the tax-exempt lands of colleges and universities really result in an inordinate loss of revenues for the tax payer? Even setting aside a 1969 study by the American Council on Education (appendix K) showing that about one out of three colleges pays taxes or performs equivalent services, the charge is questionable.

In one large city, for example, 58 percent of the land is excluded from the tax roster. Of the tax-exempt land, local, state, and federal governments own more than half and use it for such purposes as schools, roads, parks, waterways, offices, and storage areas. Churches are the second largest nontaxpayers. In addition to houses of worship, church-owned properties such as schools, parks, cloisters, residences, libraries, and competitive businesses are not subject to taxes, simply because they are church-owned. Private schools, including colleges, come third. One may question both the volume of the loss occasioned by removing colleges from the tax rolls and the justice of criticizing them and not the government and the churches.

Furthermore, many colleges are actually substantial taxpayers. In Cambridge, Massachusetts, Harvard and M.I.T. come second and third only to the Cambridge Gas and Electric Company as the largest taxpayers; fourth largest is the Boston and Maine Railroad. Princeton University is the largest single taxpayer in its community. Many colleges and universities are the biggest single employers in their small towns—and hence the biggest direct and indirect source of municipal revenues.

Hidden Benefits

Another hidden benefit, which is difficult to account for in terms of dollars, is the provision by local community colleges and trade and technical institutes of training programs for persons in local industry. In some communities, business and industry have virtually no employee training expenses because programs are provided at the public's expense, or at the trainee's expense, by local colleges. Some urban institutions are extremely responsive to these local needs and will mount elaborate and expensive programs to please local government agencies and industries.

Colleges and universities invest their endowment funds in real estate, bonds, municipals, and securities (mostly common stocks). Most of the economic contribution made through their investments is of course not

local. However, a college with a considerable portfolio of investments might do well to review the number of them in firms either located in or active in the community. Some colleges are investing directly in local businesses.

Another matter hard to evaluate in dollars is the uncompensated services rendered by college personnel to the community—to churches, school boards, civic agencies, and committees. In some cases, literally hundreds of man-days of service are given. While it may fairly be claimed that many people not associated with the college give of their time, one can say that the college acts similarly—and in so doing carries a fair share or more of the load.

Table 6 summarizes unquantified categories of college services. The different environments receiving value from those services are also suggested.

TABLE 6

Services not quantified in dollars

(V_B = value of services to local businesses; V_G = value of services to local governments; V_I = value of services to local individuals)

	V_B	V_G	V_I
Educational services			
Regular classes for nonstudents	x	x	x
Extension courses	x	x	x
Seminars	x	x	x
Conferences	x	x	x
Lectures	x	x	x
Workshops	x	x	x
Other related activities	x	x	x
Public events			
Athletic events	x		x
Cultural events	x		x
Social events	x		x
Community services			
Academic and sociological services provided by students			x
Tutoring			x
Recreational facilities		x	x
Medical and health services		x	x
Experimental, primary, and secondary schools		x	x
Other facilities		x	x
Business and professional services			
Research	x	x	x
Consultation	x	x	x
Publications	x	x	x
Library services	x	x	x
Other facilities	x	x	x

RECOMMENDATIONS AND LIMITATIONS

The objectives set forth in the initial plan of this study have essentially been met. A set of general models reflecting the economic impacts has been developed, and initial tests indicate their viability. The complexities of the real world of economic variables and their associated data requirements, however, have had their impact on the optimism with which the work began.

Some of the models, though technically sound, do not easily correlate with existing data sources. It was originally hoped (and, by some, believed) that all questionnaires and surveys could be supplanted by open sources; this proved to be impossible. Furthermore, some of the longer range impacts, which potentially are crucial to an economic impact study serving a public relations purpose, could not be addressed within the scope of this limited research effort.

In any study directed toward an ultimate practical use, there are both time and money limitations to the level of technical effort. The engineer and the social scientist have both learned that 100 percent reliability is achievable only with an infinite expenditure. The practitioner always faces the question of the optimum trade-off, where it lies between a desired reliability and the expenditure needed to achieve that reliability.

In developing these models, some nontechnical judgments about the project's scope were made. These judgments were based on the assumption that the user of the models would have a limited amount of time and money available and that the reliability level desired would be one of confidence in order-of-magnitude results rather than in exact dollar figures. The models developed do represent a reasonable compromise between accuracy and depth of analysis required. To the extent that a user may wish to further limit the scope of a study effort, some of the models for which data are difficult to obtain may be estimated grossly or omitted completely (as was done in the Claremont test case).

There are two real limitations, however, on the value of these models. The first is the problem of long-range effect, or predictive capabilities. With these models the what-if question can be answered only in a limited way by studying impacts at two different points in time based on assumptions about key variables changing over that time period. For reasonable confidence in such assumptions, further modeling of each key variable is necessary. Such modeling would identify the factors and functional relationships responsible for variation under changing conditions. This predictive modeling is extremely difficult to accomplish, and results would need to be tested in real situations before high confidence in the approach could be justified. Such a study, however, might very well be a long-range undertaking as a successor to this relatively short-range effort.

The second limitation is the omission of any specific modeling of qualitative impacts. Unless one assigns arbitrary dollar values to the factors in table 6, the qualitative impacts are not directly measurable in dollars, though they are conceivably measurable in other dimensions. A very worthwhile expansion of this study would be the development of explicit criteria for measuring qualitative impacts on the local business, government, and individual environments. At the least, an identification of the general characteristics of all those impacts would be an important aid to individual institutions undertaking their own specific studies.

In conclusion, the economic impacts of a college on its environment are varied and complex. This study has provided practical models for assessing an important segment of those impacts. As this type of formalized approach is merely a starting point, it is hoped that results of any related efforts, quantitative or qualitative, would be communicated to the American Council on Education so that the models can be made more useful in possible subsequent revisions of this manual.

THE CONCEPT OF THE MULTIPLIER

APPENDIX B

The concept of the multiplier is an important element in the equation systems presented in this report. Although different multipliers are used, for example, an income multiplier and an employment multiplier, the general concept of a multiplier is the same.

For example, consider the income multiplier. Approximately 35 cents of a dollar spent in local business establishments by community residents is returned to the spenders as income. The balance, approximately 65 cents, is spent by local business establishments for materials and supplies from other local enterprises (including local taxes) or for goods and services produced outside the community (including nonlocal taxes). But this is only the first round of transactions. The income accruing to local residents from this initial round is partially respent in the local business community. (Some is saved; some is paid out in taxes and fees to federal, state, and local governments; and some is spent outside the community.) Again, on the average, 35 cents of the dollar spent locally is returned in the form of income. This recycling process continues with diminishing increments at each stage. Eventually, income received by local residents from the initial dollar spent totals approximately 66 cents. The ratio of total income, 66 cents, to the initial income received, 35 cents, is almost two to one, 1.9:1.0.

1.9 is called the income multiplier since it measures the multiple impact of an initial income stimulus. The concept is useful in demonstrating the various repercussions of direct stimuli such as the described consumer spending and income. Similar indirect effects are carried over to local employment and to transactions between local business establishments.

The magnitude of any multiplier—income, employment, etc.—varies among localities at any point in time, as well as over a period of time for any one locality. It must be emphasized that the multiplier effects can only be statistically estimated, not traced directly. The local variation of statistical estimates, notwithstanding data errors and estimating errors, can spring from such factors as the relative dependence of a community on goods and services produced elsewhere, i.e., imports; the spending and saving preferences of the local residents; the number and demographic characteristics of the resi-

dents; the patterns of consumer spending; and the industrial and commercial structure of economic activity.

The differential effects of the above factors, plus others not listed, on employment multipliers are indicated in the following multiplier estimates:¹

1. Individual states (income units)—2.5-3.0 (average)
2. Lancaster County, Nebraska—2.3
3. Los Angeles County, California—2.2
4. Wichita, Kansas—2.0
5. Portsmouth-Dover area, New Hampshire (multiplier based on Pease Air Force Base expenditures only)—1.2-1.4
6. Hawaii—1.3
7. Ayer, Massachusetts (small town, semirural, large military installation)—1.2

It is important to note that the size of the employment multiplier shown above is, broadly speaking, directly related to the size of the geographic unit covered, the diversity of its industrial and commercial activities, and the magnitude of its population. (Hawaii, because of its great dependence on the mainland and because of military expenditures, departs from the general rule.)

The range of the employment multiplier estimated for the college impact study presented here, 1.2-1.5, falls within the general range shown and is consistent with ranges for areas of lesser diversity, size, and impact dependence. One may generalize about both specific applications of this multiplier and the income and other multipliers presented in this study. The multipliers presented here are based on an area of approximately 50,000 persons (including the student population), with employment in manufacturing averaging about 4 percent and in services and trade (including government and educational institutions) about 55 percent, respectively, of total employment in the community. For specific applications, as the employment distribution and population approaches such figures and as the community lives more on its own enterprises, the upper range of the multiplier

1. Steven J. Weiss and Edwin C. Gooding, *Estimation of Differential Employment Multipliers in a Small Regional Economy*, Research Report to the Federal Reserve Bank of Boston no. 37 (Boston, 1966), p. 38.

CALCULATION OF EXPENDITURE PROPORTIONS

APPENDIX A

The term $(e_{NH})_F$ represents the proportion of a consumer's total expenditures spent on non-housing items. The term e_H represents the proportion of a tenant's total expenditures likely to be spent for rental housing.

Expenditures are defined as follows:

1. Total expenditures are defined as cost of budget less personal taxes, social security and disability payments, life insurance and medical insurance.
2. Nonhousing expenditures are defined as cost of family consumption less housing and medical insurance.
3. Rental housing expenditures are defined as housing expenditures for renter families, including contract rent plus fuel and utilities

(where these are not part of the rent payment) and insurance on household contents.

In calculating, it is assumed that:

1. The take-home pay of a member of the faculty and staff is assumed to equal family expenditures. (Take-home pay is defined as gross income less taxes, social security payments, and health insurance payments deducted from the paycheck.) It is also assumed that there are no savings from take-home pay, other than equity in homes for home-owners.
2. It is assumed that there is no distinction between automobile owners and nonowners.
3. All insurance, social security, and personal taxes are assumed to be deducted from the paycheck.
4. The values of e_H and $(e_{NH})_F$ are calculated from data for the highest of the three living standards.

It has been found that the values of e_H and $(e_{NH})_F$ calculated for different areas vary by only a slight amount. Thus, a college conducting the study could use the values of e_H and $(e_{NH})_F$ calculated here without losing significant accuracy in the final results. If, however, the study is conducted in an area that is thought to have very different characteristics, the Detroit index should be replaced by one calculated locally. In addition, some colleges may have good data about actual incomes and expenditures from their own studies or from data collected by unions or other associations. Other factors may affect expenditure indices in unusual ways, e.g., extremes of climate, geographic isolations, or unusually high costs of living in metropolitan or resort areas.

Calculation of e_H and $(e_{NH})_F$ for Detroit

ITEM	RENTER'S COST	HOMEOWNER'S COST	AVERAGE
A. Cost of family consumption including, in part:			
b. Housing	\$ 9,774	\$ 9,906	\$ 9,937
c. Medical insurance	3,064	3,256	3,227
	317	317	317
D. Cost of budget including, in part:			
e. Medical insurance	12,698	12,949	12,911
f. Life insurance	317	317	317
g. Social security and disability	240	240	240
h. Personal taxes	290	290	290
i. Nonhousing expenditures: A-(b+c)	1,820	1,879	1,870
J. Expenditures: D-(e+f+g+h)	6,393	6,293	6,393
	10,041	10,231	10,204
$e_H = b/J = 0.32$	0.306	0.318	0.316
$(e_{NH})_F = I/J = 0.63$	0.639	0.625	0.626

Sources: *Three Standards of Living for an Urban Family of Four Persons* (Washington, D.C.: Bureau of Labor Statistics, 1967).

should be used. Where the community is smaller, less diverse in employment, and more dependent on imports, the lower end of the range should be used.

The specific estimates described below include multiplier effects. They are a combination of the original stimulus (the direct impact) and the recycling process described above (the indirect impacts). Consequently, there is no need to specify a particular multiplier value. The estimates are to be used as coefficients for multiplying the user college's estimates of local household expenditures in local business establishments.

Added Production Requirements

m_p represents the additional value of local production generated by one dollar spent by local households in local business establishments. The starting point in deriving the estimate is the average household dollar expenditure, the local final product, to which is added the average local business expenditure for locally produced materials and services, the local intermediate product, required to support the original consumer expenditure. All income effects are excluded since the estimate is restricted to final sales plus transactions between local business establishments for locally produced products. The range to be used by the college is \$.15–\$.30 per dollar of expenditures by local residents in local business establishments.

Income-Induced Requirements

Total production requirements, as defined above, exclude the effects of household income receipts and spending. m_i , income-induced requirements per dollar of final demand, represent the additional value of local industrial and commercial output when household income and expenditures are recycled. (Technically, the income-induced requirements are derived by considering households as business establishments carrying out transactions with other local business establishments.) This coefficient may be added to total production requirements when the user college wants to include household effects on the level of business output. The range to be used by the college is

\$.60–\$.80 per dollar of expenditures by local residents in local business establishments.

Total Income Effect

p represents the total amount of income accruing to local residents from the initial average dollar spent by local households in the community. Included is the amount of personal income—wages, salaries, and profits—paid from the initial dollar expenditure plus the personal income resulting from the additional business output generated by the continual recycling of household income and expenditures in the local community. The coefficient range indicates that, on the average, a dollar spent by local residents in the community will generate from 50 to 66 cents of local income. The range to be used by the college is \$.50–\$.66 per dollar of expenditures by local residents in local business establishments.

Incremental Employment Requirements

Although j is similar in concept to the other coefficients described, the computation differs in a critical basic assumption. In other coefficients, average and marginal relationships were assumed to be identical. This assumption can not be made for employment-production relationships. Consequently, this coefficient was estimated on a marginal basis where the marginal employment was significantly different from the average employment-production relationship. (Technically, the employment-requirements coefficient is the slope of a linear-regression line relating employment to production.) The employment-requirements coefficient is a measure of the marginal change in local employment associated with the average household dollar spent locally when the direct and indirect production requirements and the induced income effects on local production are taken into account. The range to be used by the college is .00007–.00009 man-years of employment per dollar of expenditures by local residents in local business establishments. For example, 70-90 man-years are associated with a change of \$1 million of final demand.

THE GRAVITY MODEL

APPENDIX C

The factor e_L represents the proportion of total nonhousing expenditures that an individual is likely to make in his local environment. This factor assumes the gravity theory, which states that the amount of money spent for nonhousing expenditures is inversely proportional to the square of the distance to the point of purchase. This is shown in the following equation:

$$e_L = \frac{\frac{RS_L}{D_L^2}}{\frac{RS_L}{D_L^2} + \frac{RS_{N1}}{D_{N1}^2} + \frac{RS_{N2}}{D_{N2}^2} + \frac{RS_{Nn}}{D_{Nn}^2}}$$

RS_L = total period retail sales in the local environment

D_L = average distance or travel time for a local individual to make a purchase within his local environment

RS_{Nn} = total period retail sales in the n^{th} competing neighboring community

D_{Nn} = average distance or travel time for the local individual to make a purchase in the n^{th} competing neighboring community

This assumed proportion is not necessarily universally true, and the user would do well to examine studies of local shopping patterns.

In implementing the gravity model in the Claremont study, the following sources and assumptions were used:

The retail sales and receipts figures (RS_L and RS_{Nn}) were obtained from the *1963 Retail Trade Area Statistics and Selected Services: Area Statistics of California Counties and Cities*.

D_{Nn} was obtained from a map of the local area.

D_L was taken to be equal to one-fourth of the longest distance in Claremont. By assuming that the city has a more or less circular area, the radius could be computed from the relation A (area) = πr^2 . Thus $r^2 = A/\pi$. Where A = area in square miles and r = radius in miles, $D_L = r/2$.

All neighboring communities from Los Angeles to San Bernardino, forming west-east boundaries of Claremont for the study's purposes, and to Newport Beach, toward the south of Claremont, were considered to be in competition with Claremont and were understood to be part of e_L . Distances and retail sales figures for each are listed in the gravity-model data table.

STUDENT EXPENDITURES

APPENDIX D

Parameters to Be Considered in Approximation

1. Type of community
 - a. Metropolitan (large city or center of population, number of cities together), urban environment makes expenditures go up.
 - b. Rural area makes expenditures go down.
 - c. The higher the standard of living, the greater the expenditures.
2. Type of college
 - a. Presence of a number of dormitories makes the expenditures go down.
 - b. Presence of a number of off-campus living arrangements, e.g., fraternities, makes the expenditures go up.
 - c. The greater the enrollment in the college, the greater the expenditures.

3. Type of students

- a. The younger the students, e.g., junior college and undergraduate students, the lower their expenditures.
- b. The older the students, e.g., graduates, the greater their expenditures.
- c. Expenditures of students attending professional schools tend to be higher than those of other students. When a majority of the students work part time, the expenditures of the full-time equivalents tend to go up.

Patterns of Student Expenditures

The statements below are based on information from *Arizona Review* to be found in table 7 and figure 5. (Table 8 gives additional material on student expenditures.)

TABLE 7

Student expenditures by class
(Dollars per month)

	FRESHMAN	SOPHOMORE	JUNIOR	SENIOR	GRADUATE
I. Food, beverages, entertainment	83.0	107.0	134.0	115.0	159.0
II. Housing	46.0	54.0	67.0	70.0	125.0
III. Travel	20.0	27.0	42.0	80.0	40.0
IV. Personal: clothing, donations, insurance, medical care, reading material	68.5	79.0	95.0	96.0	144.0
V. Miscellaneous	0.5	1.5	1.0	2.0	5.0
Total	218.0	268.5	339.0	363.0	473.0

Source: P. Escudero et al., "Arizona's Student Market," *Arizona Review*, February 1968.

Gravity-model data for Claremont

CITY	RETAIL SALES (X 1,000)	DISTANCE (miles)	CITY	RETAIL SALES (X 1,000)	DISTANCE (miles)
Claremont	\$ 16,396	0.715	Orange	\$ 68,565	23.00
Montclair	30,234	2.28	Buena Park	126,114	23.00
La Verne	5,900	3.43	Pasadena	405,207	23.00
Pomona	195,813	3.43	Pico Rivera	42,949	23.00
Upland	26,398	4.00	Alhambra	135,418	23.50
Ontario	102,158	4.57	Anaheim	258,238	23.50
San Dimas	4,719	5.72	Stanton	20,011	24.00
Chino	21,809	6.28	Commerce	46,230	24.20
Glendora	35,527	8.60	Garden Grove	163,091	24.50
Covina	121,048	10.30	Riverside	223,088	24.30
West Covina	129,089	10.30	Norwalk	117,750	24.70
Azusa	38,275	11.50	South Pasadena	29,761	25.00
La Puente	62,681	12.80	San Bernardino	313,859	25.30
Duarte	13,890	12.80	Bell Flower	106,507	25.70
Baldwin Park	23,247	14.00	Santa Ana	337,217	26.00
Brea	16,341	15.30	Downey	196,209	26.80
Fontana	52,115	16.00	Bell	45,861	27.20
Monrovia	67,271	16.60	Los Alamitos	16,664	28.00
El Monte	156,526	16.60	Maywood	13,493	28.00
Placentia	4,654	17.40	Artesia	28,502	28.00
La Habra	45,617	17.80	Lakewood	135,872	28.00
Arcadia	108,241	18.10	Cudahy	5,996	28.60
Temple City	25,861	18.40	Westminister	35,837	28.80
South El Monte	6,462	18.40	Paramount	46,012	28.80
Corona	33,869	18.40	South Gate	104,582	29.10
Fullerton	129,346	18.80	Huntington Park	115,441	29.30
Rialto	25,175	19.10	Lynwood	52,202	29.50
Sierra Madre	6,747	19.20	Glendale	277,959	30.60
Whittier	184,030	19.20	Huntington Beach	34,026	31.90
La Mirada	39,556	20.40	Compton	183,398	32.40
Rosemead	18,806	21.00	Burbank	267,465	33.20
San Gabriel	62,994	21.20	Signal Hill	21,027	33.10
Montebello	64,751	21.90	Costa Mesa	98,912	33.60
San Marino	21,196	21.50	Long Beach	654,036	33.90
Santa Fe Springs	40,631	22.80	Newport Beach	62,778	35.20
Monterey Park	47,125	22.80	Los Angeles	5,994,386	40.00
Colton	23,719	23.00			

1. The expenditure pattern of a student in the freshman-to-graduate range is represented by the straight-line equation $y = 56.25x + 218$, where y is dollars spent per month and x is class standing.
2. A college with a majority of graduate students has to provide an adequate standard of housing for its students (alternatively, the community must provide this), since graduate students tend to spend more on housing than do undergraduates.
3. Transportation expenses of students rise considerably from freshman to senior years, then decrease considerably in graduate years. This may

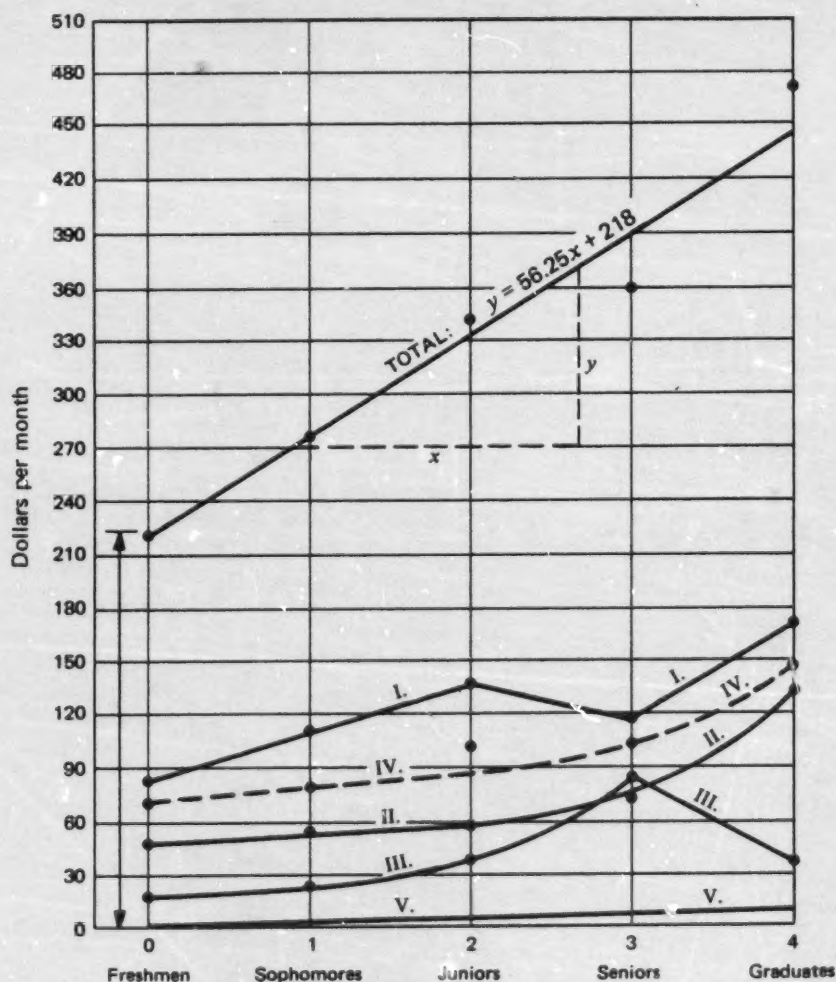
stem from the fact that graduate students tend to spend more time on campus.

4. Student expenses during each graduate year are nearly twice as great as those in the initial year of college.

5. Graduate students compose a consumer market larger than any single undergraduate class.

These results may not hold true in other parts of the country, nor even in Arizona itself over a period of time. They do, however, reveal a gross trend of student expenditures as related to class standing. This information may prove particularly useful where the college is expanding its facilities to include graduate education.

FIG. 5. Student expenditures by class



Source: P. Escudero et al., "Arizona's Student Market," *Arizona Review*, February 1968.
 Note: For key to roman numerals, see tables 7 and 8.

TABLE 8

Average student expenditures by type of item in ten locations

	TULANE	DRAKE	BAKERSFIELD		MACOMB		GONZAGA		TRI-STATE			
	% of Total	% of Total	\$ per Student per Month	% of Total	\$ per Student per Month	% of Total	\$ per Student per Month	% of Total	In Town		Out of Town	
									\$ per student per month	% of total	\$ per student per month	% of total
I. Food, beverages, entertainment	29.0	20.0	39.0	23.5	70.0	31.0	12.0	18.0	45.0	43.5	15.0	30.0
II. Housing, utilities, furniture, appliances	31.5	11.5	50.0	30.3	35.0	15.5	--	--	21.0	20.2	4.0	8.6
III. Travel, car and cycle payments, car insurance, repairs	8.0	10.0	25.0	15.3	30.0	13.5	19.0	26.0	15.0	14.2	18.0	36.5
IV. Personal: clothing; school supplies purchased off campus; hygienic needs; life, medical, home insurance; medical and dental care; laundry, dry cleaning; magazines, newspapers; donations	22.0	33.5	51.0	30.9	75.0	33.0	26.5	36.0	20.0	19.2	11.0	22.5
V. Miscellaneous	9.5	25.0	--	--	16.0	7.0	14.5	20.0	3.0	2.9	1.0	2.4
Total	100	100	165.0	100	226.0	100	72.0	100	104.0	100	49.0	100

Note: The institutions described are Tulane University, La.; Drake University, Iowa; Bakersfield College, Calif.; Macomb County Community College, Mich.; Gonzaga University, Wash.; Tri-State College, Ind.; Rutgers University, N.J.; University of Miami, Fla.; University of Arizona and Arizona state colleges (combined); University of Florida.

STUDENT RENTAL AND NONHOUSING EXPENDITURES TABLES

APPENDIX E

Tables 9 and 10 include data for student rental and nonhousing expenditures computed from published sources. See page 35 for computational procedures.

TABLE 9

Student rental expenditures for nine-month year

LOCATION	AVERAGE PER CAPITA EXPENDITURES			LOCATION	AVERAGE PER CAPITA EXPENDITURES		
	Low	Moderate	High		Low	Moderate	High
Urban United States				North Central-continued			
Metropolitan areas				Minneapolis-St. Paul,			
(pop. over 50,000)	\$347	\$438	\$689	Minn.	359	454	630
Nonmetropolitan areas				St. Louis, Mo.-Ill.	346	422	561
(pop. 2,500-50,000)	293	358	449	Wichita, Kan.	353	431	587
Total	338	424	645	Nonmetropolitan areas	357	409	474
Northeast				South			
Boston, Mass.	388	465	689	Atlanta, Ga.	314	374	452
Buffalo, N.Y.	336	426	583	Austin, Tex.	257	342	522
Hartford, Conn.	409	504	675	Baltimore, Md.	354	453	642
Lancaster, Pa.	318	407	544	Baton Rouge, La.	292	358	605
New York-				Dallas, Tex.	324	426	790
Northeast N.J.	316	442	821	Durham, N.C.	324	398	494
Philadelphia, Pa.-N.J.	301	357	777	Houston, Tex.	291	362	535
Pittsburgh, Pa.	307	468	505	Nashville, Tenn.	318	374	614
Portland, Maine	333	393	452	Orlando, Fla.	313	413	504
Nonmetropolitan areas	246	346	433	Washington, D.C.-			
North Central				Md.-Va.	398	452	679
Cedar Rapids, Iowa	410	491	702	Nonmetropolitan areas	263	324	435
Champaign-Urbana, Ill.	447	586	800	West			
Chicago, Ill.-				Bakersfield, Calif.	284	356	389
Northwest Ind.	386	501	767	Denver, Colo.	323	426	719
Cincinnati, Ohio-Ky.-Ind.	318	390	383	Honolulu, Hawaii	490	599	840
Cleveland, Ohio	354	420	574	Los Angeles-			
Dayton, Ohio	348	448	720	Long Beach, Calif.	383	474	810
Detroit, Mich.	315	375	671	San Diego, Calif.	337	416	645
Green Bay, Wis.	318	361	503	San Francisco-			
Indianapolis, Ind.	397	452	572	Oakland, Calif.	411	539	771
Kansas City, Mo.-Kan.	344	423	614	Seattle-Everett, Wash.	407	510	674
Milwaukee, Wis.	375	441	598	Nonmetropolitan areas	335	397	460

RUTGERS				MIAMI				ARIZONA		FLORIDA					
In Town		Out of Town		Male		Female		\$ per Student per Month	% of Total	In Dorm		Off Campus		With Parents	
\$ per student per month	% of total	\$ per student per month	% of total	\$ per student per month	% of total	\$ per student per month	% of total			\$ per student per month	% of total	\$ per student per month	% of total	\$ per student per month	% of total
47.0	47.0	23.0	32.2	110.5	45.0	98.0	39.5	116.0	35.5	60.0	38.4	84.0	25.0	52.0	34.9
10.5	10.5	7.0	9.8	58.0	23.5	44.5	17.5	70.0	21.5	--	--	105.0	30.8	--	--
8.5	8.5	6.0	8.4	45.0	18.5	47.0	19.0	41.0	12.5	27.0	17.3	31.0	9.2	25.0	16.8
31.0	31.0	34.0	47.5	32.0	13.0	59.5	24.0	96.5	30.0	45.5	29.0	64.0	19.0	52.0	34.9
3.0	2.0	1.5	2.1	--	--	--	--	1.5	0.5	24.0	15.3	55.0	16.0	20.0	13.4
100.0	100	71.5	100	245.5	100	249.0	100	325.0	100	156.5	100	339.0	100	149.0	100

TABLE 10

Student nonhousing expenditures for nine-month year

LOCATION	AVERAGE PER CAPITA EXPENDITURES			LOCATION	AVERAGE PER CAPITA EXPENDITURES		
	Low	Moderate	High		Low	Moderate	High
Urban United States				North Central-continued			
Metropolitan areas				Minneapolis-St. Paul,			
(pop. over 50,000)	\$1,186	\$1,717	\$2,349	Minn.	1,135	1,655	2,240
Nonmetropolitan areas				St. Louis, Mo.-Ill.	1,195	1,720	2,330
(pop. 2,500-50,000)	1,167	1,613	2,149	Wichita, Kan.	1,162	1,685	2,270
Total	1,176	1,698	2,312	Nonmetropolitan Areas	1,135	1,600	2,150
Northeast				South			
Boston, Mass.	1,194	1,755	2,424	Atlanta, Ga.	1,135	1,655	2,250
Buffalo, N.Y.	1,206	1,765	2,362	Austin, Tex.	1,110	1,625	2,180
Hartford, Conn.	1,265	1,848	2,483	Baltimore, Md.	1,120	1,630	2,250
Lancaster, Pa.	1,189	1,746	2,351	Baton Rouge, La.	1,125	1,655	2,270
New York-				Dallas, Tex.	1,120	1,635	2,250
Northeast N.J.	1,219	1,784	2,470	Durham, N.C.	1,086	1,605	2,200
Philadelphia, Pa.-N.J.	1,184	1,715	2,370	Houston, Tex.	1,142	1,665	2,280
Pittsburgh, Pa.	1,190	1,775	2,360	Nashville, Tenn.	1,115	1,632	2,220
Portland, Maine	1,190	1,695	2,300	Orlando, Fla.	1,085	1,595	2,200
Nonmetropolitan Areas	1,175	1,690	2,240	Washington, D.C.-			
North Central				Md.-Va.	1,175	1,710	2,340
Cedar Rapids, Iowa	1,165	1,690	2,270	Nonmetropolitan Areas	1,092	1,560	2,080
Champaign-Urbana, Ill.	1,165	1,685	2,290	West			
Chicago, Ill.				Bakersfield, Calif.	1,195	1,710	2,310
Northwest Ind.	1,182	1,685	2,340	Denver, Colo.	1,185	1,710	2,320
Cincinnati, Ohio-Ky.-Ind.	1,160	1,665	2,250	Honolulu, Hawaii	1,332	1,900	2,562
Cleveland, Ohio	1,185	1,665	2,260	Los Angeles-			
Dayton, Ohio	1,150	1,650	2,240	Long Beach, Calif.	1,240	1,755	2,400
Detroit, Mich.	1,175	1,705	2,310	San Diego, Calif.	1,210	1,705	2,320
Green Bay, Wis.	1,125	1,640	2,210	San Francisco-			
Indianapolis, Ind.	1,165	1,700	2,300	Oakland, Calif.	1,278	1,800	2,480
Kansas City, Mo.-Kan.	1,185	1,725	2,290	Seattle-Everett, Wash.	1,282	1,840	2,462
Milwaukee, Wis.	1,145	1,665	2,260	Nonmetropolitan Areas	1,205	1,682	2,230

RATIOS OF CASH AND INVENTORY TO BUSINESS VOLUME

APPENDIX **F**

Cash = 3.7 percent of business receipts.

Inventory value = 12 percent of business receipts.

These percentages, taken from the U.S. Internal Revenue Service's *Statistics of Income, 1965: Business Income Tax Returns*, are calculated for corporations but are not significantly altered if partnerships with balance

sheets are included. Firms engaged in agriculture, mining, finance, insurance, and real estate have been excluded because their asset structure tends to overstate the desired statistics.

TABLE FOR DETERMINING AVERAGE LOCAL TIME AND DEMAND
DEPOSITS OF FACULTY, STAFF MEMBERS, AND STUDENTS

APPENDIX **G**

TABLE 11

Bank deposits by selected age and income categories, 31 December 1962

1962 INCOME	CHECKING ACCOUNTS	SAVINGS ACCOUNTS		
		Total	In Banks	In Savings and Loan Associations
Head under 35				
\$ 0-2,999	\$ 50	\$ 34	\$ 23	\$ 5
3,000-4,999	63	97	40	42
Head 35-54				
\$ 5,000-7,499	255	950	541	352
7,500-9,999	277	1,352	503	554
10,000-14,999	450	2,279	968	991
15,000-24,999	957	3,690	2,202	1,209

Source: Dorothy S. Projector and Gertrude S. Weiss, "Survey of Financial Characteristics of Consumers," *Federal Reserve Technical Papers*, (Washington, D.C.: Board of Governors of the Federal Reserve System, 1966), pp. 118-19.

FACULTY, STAFF, AND STUDENTS' CHILDREN ATTENDING PUBLIC SCHOOLS

APPENDIX H

$(CH_{PS})_F$ represents the number of faculty and staff children attending public schools. There are 685 faculty and staff members residing in Claremont (see model B-1.1.2.1). According to the U.S. Census Bureau's "General Population Characteristics," there were 2,699 households and 3,813 children under eighteen years of age in Claremont in 1960. Therefore, the average number of children of school age per household was $3,813/2,699$, or 1.41. Assuming the same figure for faculty and staff families, there would be 1.41×685 school-aged children of faculty and staff families.

As shown in Department of Planning and Community Development data sheets in "Population Characteristics, 1965," out of a total of 5,802 children, there were 2,307 in public schools. Thus, 39.7 percent were in public schools.

According to the 1965 special census conducted by

the same department, the total population in Claremont was 21,474. The 1968 California controller estimate for Claremont showed the population to be 24,294. Therefore, the percentage of children in Claremont public schools in 1968 was $.397/21,474 \times 24,294 = .45$, or 45 percent. Therefore, $(CH_{PS})_F = 685 \times 1.41 \times .45 = 434$.

$(CH_{PS})_S$ represents the number of students' children attending public schools. There were 35 married students in the Claremont Colleges in 1967-68, according to a tally of students conducted for this study. 57 percent of graduate students have children, according to James A. Davis, *Stipends and Spouses: The Finances of American Arts and Science Graduate Students* (University of Chicago Press, 1962). It was assumed that each graduate student reporting children had a minimum of one and that all married students were graduates. Thus, $(CH_{PS})_S = 35 \times .57 \times .45 = 9$.

PROPORTION OF INCOME USED TO PURCHASE DURABLE GOODS

APPENDIX I

As reported in the Bureau of Labor Statistics publication *Three Standards of Living for an Urban Family of Four Persons*, the cost of budget for a moderate-income family in the Los Angeles-Long Beach area

was \$9,326. Expenditures for house furnishings, part of this total, were \$285. Therefore, *i*, the proportion of total income used to purchase durable goods, is $\$285/\$9,326 = .03$, or 3 percent.

FACULTY AND STAFF EXPENDITURES TABLES

APPENDIX J

Tables 12 and 13 present data on faculty and staff expenditures at Tri-State College, Indiana; University of Miami, Florida; and Rutgers University, New Jersey.

TABLE 12

Average faculty expenditures at three institutions

	TRI-STATE				U. OF MIAMI	RUTGERS			
	In Town		Out of Town			In Town		Out of Town	
	\$ per person per month	% of total	\$ per person per month	% of total		\$ per person per month	% of total	\$ per person per month	% of total
Food, beverages	112	28.00	5	5.80	17.00	102	31.44	22	15.30
Rent	58	14.50	10	12.15	16.70	31	10.40	8	5.50
Personal services					1.50	192	4.00	4	2.78
Laundry, dry cleaning						6	2.00	2	1.39
Newspapers, magazines	5	1.30	1	1.15	1.50	4	1.33	3	2.08
Transportation	26	6.50	3	4.10	5.30	4	1.33	2	1.39
Utilities	38	9.50	1	1.35		18	6.00	5	3.47
Automobile service	9	2.25	2	2.00		21	7.00	6	4.16
Loan payments	28	7.00	11	13.80		8	2.65	7	4.86
Clothing	19	4.75	10	12.40	3.70	16	5.30	10	6.95
Insurance	19	4.75	19	22.30	5.40	14	4.60	19	13.20
Property taxes						19	6.30	5	3.47
Furniture, etc.	13	3.25	6	7.60		10	3.30	4	2.78
Recreation	11	2.75	3	4.10	3.90	11	3.60	19	13.20
Donations	9	2.25	2	2.00	3.70	9	3.00	7	4.86
Medical, dental	25	6.25	3	4.10	4.00	14	4.65	6	4.16
Professional services						2	0.70	2	1.39
Educational expenses					4.10	7	2.40	13	9.02
Taxes	13	3.25	---	---	17.40				
Savings					8.60				
Other	15	3.75	5	6.20	8.20				

TAX AND TAX-RELATED ARRANGEMENTS BETWEEN COLLEGES AND UNIVERSITIES AND LOCAL GOVERNMENTS

APPENDIX K

About one out of three (34%) colleges and universities in the United States now pays taxes (and/or makes cash payments "in lieu of" taxes) and/or provides direct services in addition to or instead of those provided by local government agencies, according to a survey recently completed by the Commission on Administrative Affairs of the American Council on Education. About one out of six (17%) institutions of higher education is now under pressure or faces some local action to make such payments and/or to provide such direct services, the survey indicates. (In this report, the term *direct services* means such services as police and fire protection, health, or other *public services* provided on campus and/or to the local community by college and university units and at the institution's own expense.)

About one out of six (17%) institutions now pays taxes of some kind to a local municipality. The same proportion make equivalent cash contributions or payments in lieu of taxes. About one out of eight (12%) provides direct services. About one out of nine of the surveyed institutions (11%) now faces action or is under pressure to pay taxes, one out of eight (12%) to make payments in lieu of taxes, and only one out of 25 (4%) to provide direct services.

The survey was undertaken because of the increasing concern on the part of many institutions of higher education about demands by local communities that tax-exempt organizations meet some or a larger portion of the costs of local government services. The study was designed to estimate, from reports by a representative sample of Council members, the extent to which institutions of higher education have already responded to these demands or are under pressure to do so. In addition, information was sought about the nature and origin of these arrangements, about differences in practice among different kinds of institutions, and about institutional attitudes toward present situations.

In early May 1969, a short questionnaire was mailed to 407 institutions represented in the "data bank" project of the Council's Office of Research. These institutions

comprise a stratified random sample of all recognized colleges and universities in the United States. Respondents were not asked to identify themselves by name but were asked to classify their institution as to type. Of the 407 questionnaires mailed, 318 (78%)—more than three out of four—were returned in time to be included in tabulations.

Of 53 institutions now paying taxes, eight (15%) are under pressure to do so or to make equivalent arrangements. Of those making other or in-lieu-of payments, exactly half are under pressure or facing some action to make additional arrangements (one out of three of them to make still other payments). Of those who now provide direct services, one out of five is under pressure to provide additional services, and two out of nine (22%) are under pressure to pay taxes or make other payments.

In addition, the responses of those now paying taxes were analyzed to see what else they do. Of these, about two out of five (41%) also make cash or other payments, and fewer than one out of seven (15%) provide direct services. Of those institutions which now make quasi-tax payments in-lieu-of, more than one out of four (27%) also provide some direct services.

Nine out of ten institutions that report paying taxes are privately controlled, and about two out of five (41%) tax-paying institutions are church related. Of those institutions that make other payments, about two out of five (41%) are publicly controlled, and the same proportion are private nonsectarian institutions. Well over half (57%) of the institutions that provide equivalent services are publicly controlled. Thus private institutions appear much more likely to pay taxes or make equivalent payments, while public institutions are much more likely to provide direct services.

In rank order of frequency, taxes or quasi-taxes are paid, or services are provided, for the following purposes (percentages add to more than 100% because of multiple responses):

50%	Sanitary services
40%	General fund
37%	Fire services
18%	Police services

TABLE 13

Average staff expenditures at three institutions

	TRI-STATE				U. OF MIAMI	RUTGERS			
	In Town		Out of Town			In Town		Out of Town	
	\$ per person per month	% of total	\$ per person per month	% of total		\$ per person per month	% of total	\$ per person per month	% of total
Food, beverages	104	28.40	26	14.00	25.00	120	33.00	16	16.00
Rent	47	12.85	28	15.00	23.10	33	9.10	5	5.00
Personal services					2.70	12	3.30	2	2.00
Laundry, dry cleaning						8	2.20	1	1.00
Newspapers, magazines					1.30	6	1.65	2	2.00
Transportation	24	6.56	22	11.85	5.20	5	1.38	2	2.00
Utilities	51	13.90	3	1.61		20	5.50	6	6.00
Automobile service	7	1.91	2	1.07		24	6.60	4	4.00
Loan payments	7	1.91	20	10.75		15	4.12	7	7.00
Clothing	15	4.10	15	8.10	4.60	24	6.60	7	7.00
Insurance	20	5.45	22	11.85	6.30	19	5.25	11	11.00
Property taxes						13	3.58	3	3.00
Furniture, etc.	9	2.46	11	5.91		12	3.30	5	5.00
Recreation	7	1.91	13	7.00	1.80	15	4.12	13	13.00
Donations	13	3.56	6	3.22	2.40	12	3.30	4	4.00
Medical, dental	28	7.65	11	5.91	4.50	15	4.12	3	3.00
Professional services						3	0.83	1	1.00
Educational expenses	2	0.55	1	0.54	2.50	7	1.93	8	8.00
Taxes	16	4.37	—	—	8.90				
Savings					4.20				
Other	6	1.64	6	3.22	7.40				

- 14% Street maintenance
- 11% School fund
- 7% Utilities (listed under "other")
- 4% Hospital fund
- 3% Flood control (listed under "other")

On what basis are payments of taxes or quasi-taxes (as distinct from direct services) made? In rank order of frequency, the following were reported:

- 38% Estimated cost of services provided by local government
- 32% Fixed proportion of assessed value of tax-exempt property
- 20% Fixed contribution based on some arbitrary assumption
- 15% Locally determined real estate tax
- 14% Fixed proportion of revenues from non-academic, auxiliary enterprises
- 5% Fixed per capita (per student) rate per annum
- 1% Fixed proportion of total annual revenues

Fewer than one out of ten institutions (9%) report taking action to avoid, resist, or eliminate some form of tax payments (or equivalent). However, of those making such payments or providing direct services, two out of five are "very satisfied" with the arrangements, half are "moderately satisfied," and only one out of ten is "very dissatisfied."

How did the present arrangements originate? About three out of ten (29%) initiated the practice voluntarily, nearly two out of five (38%) initiated the practice jointly (i.e., by agreement with local government units), and about one out of three (33%) makes payments or provides services as a result of requirements, rulings, or ordinances and did not initiate the arrangements.

How much money is involved in these arrangements? The range of annual tax and quasi-tax payments reported is from \$385 to \$1,034,271, with a median (average) payment of \$13,000. The annual cost to the institution of providing direct services ranges from \$500 to \$1,595,000, with a median cost of \$50,000. Thus it appears that direct services involve larger costs than do cash payments, though there may be a slight tendency to inflate the value of the direct services. (As an additional caution, it should be noted that respondents were asked only for estimates.)

Of those respondents indicating their total annual budgeted expenditures for operations, one out of ten reports expenditures of less than \$1 million, and slightly more than three percent spent over \$100 million.

Do the attitudes of those paying taxes or quasi-taxes or providing direct services have any relation to the origin of the arrangement? Of those who made the arrangement voluntarily, fewer than one out of ten (7%) report being

"very dissatisfied," and about four out of nine (44%) are "very satisfied." When the arrangement was arrived at jointly by the institution and the local government, there were no reports of dissatisfaction, and nearly two out of five (37%) are "very satisfied." In the case of involuntary arrangements, more than one out of four (28%) report being "very dissatisfied," while the rest are almost evenly divided between being "very" and "moderately" satisfied.

It is not surprising that of those institutions who are taking some action to resist making payments or providing services, five out of eight report being "very dissatisfied" with the present situation. Of those taking no such action, more than nine out of ten (93%) are "very" or "moderately" satisfied. Three out of four of those taking some action to resist or alter an existing arrangement entered into it involuntarily. However, of those institutions making no resistance, about one out of three (35%) entered into the arrangement involuntarily. In fewer than one out of five (17%) of the involuntary cases was any resistance reported. Only one institution reported resisting an arrangement entered into voluntarily.

Respondent institutions were asked to classify themselves as a university, a four-year college, or a two-year college. Of those institutions paying taxes, more than two out of three (71%) are four-year colleges. Of those making other or quasi-tax payments, slightly more than one out of twenty (6%) are two-year colleges, and the remainder are almost evenly divided between universities and four-year colleges. Of those institutions providing direct services, about three out of five (61%) are universities and one out of three (33%) is a four-year college. Thus, as the burden of paying taxes falls most heavily on the private institutions, as reported above, it also falls most heavily on the four-year colleges.

The results of this study also indicate that smaller institutions are more likely to pay taxes. One out of three institutions in the sample reported enrollments of fewer than 1,000 students, but more than half (54%) of the institutions paying taxes fall in this enrollment category. Of the sample, almost three out of ten (28%) report enrollments of 5,000 or more, but fewer than one out of ten (8%) of those paying taxes are such large institutions. Of those institutions which provide direct services, about three out of five (61%) report enrollments of 5,000 or more. Almost two out of five institutions (39%) are in the enrollment category 1,000-4,999, but a somewhat larger proportion (46%) report making payments equivalent to taxes. Most institutions paying taxes or making equivalent payments report enrollments of less than 5,000; relatively few large institutions pay taxes and tend, rather, to provide direct services.

Do the origins of tax-paying and equivalent arrangements differ between publicly and privately controlled institutions of different types? About three out of four

(78%) voluntary arrangements are entered into by private institutions (two out of three of them being nonsectarian). About three out of five (62%) instances of joint initiation occur in publicly controlled institutions, though slightly less than two out of five (39%) of the institutions in the study sample are publicly controlled. Of the involuntary arrangements, more than four out of five (82%) are reported by privately controlled institutions, though only three out of five (61%) of the respondent institutions are in the private sector.

Well over half (56%) of the voluntary arrangements are reported by four-year colleges, while about three out of five (59%) of the joint actions involve universities. Three out of five of the involuntary arrangements were made by four-year colleges, though fewer than half (49%) of the respondent institutions are four-year colleges.

From the findings reviewed above, it appears that the small, private, four-year colleges are much more likely to be taxed and to have entered such arrangements reluctantly, though almost a third (31%) of the involuntary arrangements involve universities.

Are there regional differences in these arrangements? The proportion of institutions paying taxes or quasi-taxes is roughly equal to the proportion of institutions responding to this survey in each of four regions, except in the Southeast, where only 9% report such payments, though 15% of the institutions are located there. In the North Atlantic region, in which 35% of the surveyed institutions are located, 42% make such payments. When the institutions providing direct services are added to the analysis, the result is roughly the same as for payments.

More than two out of three (68%) of the institutions surveyed are in communities of less than 100,000 persons, and another one out of four are in larger communities of up to one million. Almost four out of five (79%) institutions that pay taxes are located in communities with populations of less than 100,000, the same proportion provide direct services, and almost nine out of ten (88%) institutions that make equivalent, quasi-tax payments are in communities in the same population range. While more than a third (36%) of institutions now under pressure to pay taxes are located in cities of 500,000 or larger, though only one out of five (20%) of the surveyed institutions are located in cities of that size, the pressure to pay taxes or make some equivalent arrangement is still very strong in smaller communities.

Other Responses

Several respondents made comments and observations that cast additional light on attitudes and policy questions.

One university vice-president said:

There is no question in my mind that colleges and universities will be coming under extremely strong pressure from local governments for payments in

lieu of taxes. From our own experience, however, it seems highly unlikely that in the near future there will be anything like a common approach or formula for the solution of this problem. . . . It would seem that great assistance might be given to the academic community if it were possible to identify and agree on a set of principles which could be used.

The complexities of the issues involved in taxation of colleges and universities were stressed in several comments. The treasurer of a small, private college reported, for example, taking "court action to resist an assessment by the Federal government on that portion of endowment income derived from farm ownership." In another area, the state "seeks to collect sales tax on food sales to students eating in the college's private dormitory dining rooms." Locally, one respondent reported, "The college will lose its exemption from real state taxes on all property not used directly for an educational purpose. Thus property adjacent to the campus, purchased for future expansion, is taxable."

Resistance to such incursions on traditionally tax-exempt areas is not based entirely on loss of revenue. One college treasurer sees a more serious objection:

The trend is to take away the exemptions which have aided us in the past and force us to submit to greater government assistance. I strongly prefer the independence from government aid. State and Federal aid can help lead to government control.

Some institutions have been made increasingly and uncomfortably aware of the vigor of attempts of tax-hungry municipalities to find tax sources in every conceivable corner. The attempt to avoid a direct tax by negotiating some form of payments in lieu of taxes is looked upon in some quarters as futile or worse. As one university vice-president reported, "Once a payment in lieu of taxes was established, there would be no guarantee that the city wouldn't place an additional tax on us." In addition, "Once a payment in lieu of taxes had been started, there would be no way to escape from it" if local efforts to impose regular taxes fail. The same warning is sounded with respect to the provision of direct services in lieu of taxes.

In one community, the resistance of local colleges to the idea of taxing general revenues was bitterly resented by the leaders of the local municipality. One institution passed a *portion* of the imposed tax on to students and identified the amount reserved for taxes on the statement of college fees. City officials expressed annoyance that the college should even call the attention of students to the tax.

In one state, some state sales tax payments revert to the city, and in communities dominated by one or more

institutions the latter may account for a high percentage of the city's sales tax receipts.

One private college operates an alumni house as a "hotel" for alumni visitors and college guests and as "a restaurant for anyone in the community" and pays taxes on the operation. In this instance, the college feels that these are "taxes we should pay and are not an attempt by the town to take tax money from us."

In one urban community a private university operates a campus store which collects nearly \$50,000 a year in sales taxes remitted to the same institution, the treasurer "would expect (the) food service operator collects and remits a small amount."

In one state university a tax on the university's taxable land is paid by the state directly to the local municipality and does not appear in the university's budget. The state legislature recently donated a \$32,000 fire engine to the town and earlier a \$300,000 sewage treatment plant. The state also paid to the city in which a branch campus was located a tax payment on a university-owned building.

It is not rare to find a major institution of higher education that is the largest single taxpayer or source of tax revenues in the community. In a public statement, Princeton University revealed that

the last two decades have seen the amount that the supposedly "tax exempt" university pays in . . . taxes swell from just under \$120,000 annually to almost three-quarters of a million dollars a year. . . In the Township, the increase has been more dramatic—a jump from \$31,325 in 1950-51 to \$464,581 (in 1969). . . Nearly 31 of the 36-plus acres of land (the university) has acquired since 1946 remain on the tax rolls. . . The records show that 199 of the acres on which the university pays taxes are under water.

Not all the varieties of taxation and service practices can be covered in one short questionnaire, but it is obvious that many institutions which citizens may casually believe to be free of tax burdens are far from free of them.

The payment of taxes is an annual matter. What is more difficult to assess is the contributions *in kind* that an institution may make over an extended period. One small private college is contributing \$500,000 toward the construction of a new community school. Several small colleges made statements such as the following: "We are assessed and pay regular property taxes on all property

not directly used for educational purposes. This includes most faculty housing."

In another state, a college pays taxes on property owned by its endowment fund, and the state is giving the private institutions a few years in which to dispose of such properties—or to begin paying a property tax.

In several states, battles are in progress in local and state courts, and the outcomes from these may prove of major importance not only to the combatants but also to institutions and communities in other states. From many comments received in this survey, it seems clear that the general situation is changing rapidly, that pressures are building up to find new sources of tax revenues, and that important precedents may be established—though perhaps, in some cases, they may be determined state by state. Any published study of this problem will quickly become out of date.

The fact that some institutions pay taxes voluntarily and are reasonably satisfied with the arrangement indicates that many such arrangements are perceived as *fair*. What seems to be perceived as unfair or as working a hardship indirectly on those not actually being taxed is any scheme that takes from an institution money for another public purpose, leaving some other portion of the taxpaying public to pick up the tab for the college or university. It is also obvious that taxation is viewed in the private sector as opening the door to public control.

In summary, about one out of three institutions responding to this survey pays taxes or quasi-tax equivalents or provides direct services in addition to or instead of those provided by local government. In some instances, the college or university is a major or important source of income to local government. A few institutions are under some pressure to initiate or enlarge such contributions, but few institutions are "very dissatisfied" with present arrangements.

Postscript

A knowledgeable reviewer of an early draft of this report made the following comment on the findings:

I am astonished at the small percentage of institutions that are making some kind of payment to their municipalities. My hunch is that if most of them don't move toward voluntary payment for services, they are likely to find increasingly that they will be involuntarily paying taxes. I have no evidence to support the hunch, but I know that if I were a college president I would be taking the initiative in working out an arrangement with the municipality.

QUESTIONNAIRE FOR FACULTY, STAFF, AND STUDENTS

APPENDIX L

The following questionnaire is designed to obtain information for estimating specific factors in the models. The questions are the check-off or fill-in type and require only a few minutes to complete. However, not all questions may need to be administered. The selection depends on the availability of other sources and on the significance of the individual models to the particular institution being studied.

The variables with references to this questionnaire as the major potential source are:

Model	Variable	Relevant questions
B-1.1.2.3	(E ₁) _F	1, 4, 8
B-1.1.3.4	(E ₁) _S	1, 4, 8
G-2.1	FH _L	1, 3
	SH _L	1, 3

Other variables for which this questionnaire may prove valuable are:

Model	Variable	Relevant questions
B-1.1.2.1	f _L	1, 4
	f _H	1, 4, 5
B-1.1.3.1	S _L	1, 4, 5
	(E _m) _S	1, 4, 5, 6
B-1.1.3.2	S _H	1, 4, 5
	(E _n) _S	1, 4, 5, 6
B-1.1.3.3	(E _{nh}) _S	1, 4, 5, 6
B-1.1.3.4	SNL	1, 4
B-3	TD _f	1, 9
	TD _s	1, 9
	DD _f	1, 9
	DD _s	1, 9
G-1.1.2	F _L	1, 4
G-1.4.1	(CHPS) _F	1, 3
	(CHPS) _S	1, 3

QUESTIONNAIRE

1. What is your college status? (Check the category representing your primary status at the college.)

- ☐ Faculty
- ☐ Staff
- ☐ Graduate student
- ☐ Undergraduate student

2. What is your marital status? (Check one.)

- ☐ Single, widowed, divorced, separated
- ☐ Married

3. How many persons are there in your household? _____

- a. How many are children? _____
- b. How many of those children attend public schools? _____

4. Where is your college residence? (Check one.)

- ☐ On campus
- ☐ In a local community adjacent to the college
- ☐ In a remote community

5. In what type of housing do you reside? (Check one.)

- ☐ College dormitory
- ☐ Fraternity or sorority
- ☐ Other student living group
- ☐ Rent
- ☐ Own home
- ☐ With parents

6. Does your housing expenditure include substantially all board (meals)? (Check one.)

- ☐ Yes
- ☐ No

a. If you answered yes, please estimate your average monthly expenditures in the following categories:

- Room and board _____
- Other food expenditures _____
- All other nonhousing expenditures _____

b. If you answered no, please estimate your average monthly expenditures in the following categories:

- Housing expense _____
- Food expense _____
- All other expenses _____

7. What is the total annual income of all persons in your household before payroll deductions? _____

After payroll deductions? _____

8. What is your approximate monthly expenditure in business establishments in each local community listed here,* exclusive of the college facilities?

9. What are your average balances in the following categories?

- Local bank checking accounts _____
- Local bank savings accounts _____
- Local credit union savings _____
- Local savings and loan institution savings accounts _____

*Insert the actual communities being studied.

SURVEY OF STUDENT LIVING GROUPS

APPENDIX **M**

To obtain estimates of certain factors related to student living groups, a telephone sample survey is recommended. Questions for that survey follow. Listed below are the variables requiring estimates and the associated question numbers.

Model	Variable	Relevant question
B-1.1.3.5	(E _{LGH}) _S	2
	(e _{LGNH}) _S	4
	(E _{LGO}) _S	3
G-1.1.3	(R _{RE}) _{Sn}	5
G-1.2.2	(R _{NRE}) _{Sn}	6

Question 1 provides categories for distinguishing and summarizing estimates.

TELEPHONE SURVEY

1. Type of student living group:

- ☐ Fraternity
- ☐ Sorority
- ☐ Other

2. What is your monthly expenditure for rent? _____
3. What are your total monthly operating expenditures, including food? _____
4. What is the approximate percentage of your operating expenditures spent in the local community? _____
5. What are your annual real-estate taxes? _____
6. What are your annual property taxes other than real-estate taxes (e.g., automobile)? _____

SURVEY OF LOCAL BUSINESSES

APPENDIX N

A few factors concerning local businesses can be estimated best with a sample survey. A telephone survey approach is again recommended. Questions for that survey follow. Listed below are the variables and the associated question numbers.

Model	Variable	Relevant question
B-2.3	OP_n	3
	BV_n	2

It is suggested that the estimates be categorized according to question 1.

TELEPHONE SURVEY

1. Type of business:

- ☐ Retail store
- ☐ Restaurant
- ☐ Theater or other entertainment
- ☐ Professional services
- ☐ Wholesale supplier
- ☐ Manufacturing
- ☐ Other

2. What is your annual gross business volume? _____
3. What is the value of any local business property other than real property or inventory? _____

PRINCETON UNIVERSITY IN THE COMMUNITY AND IN THE STATE

APPENDIX ○

On February 26, 1969, Ricardo A. Mestres, financial vice-president and treasurer of Princeton University, presented the following paper to the Tax Exempt Property Study Commission of New Jersey.

His description of the economic relations between the university and its community and state, made in person, seemed to the authors a model of both method and tone or approach. His coverage of the unquantifiable elements was especially instructive.

With the permission of Mr. Mestres, we have reproduced the presentation almost exactly as given to the press. Minor alterations and omissions of no consequence have been made to conform with the publisher's style and

the authors' purposes. On the other hand, certain specific local references have been left untouched, even if not fully comprehensible to readers who do not know Princeton, to illustrate the specificity and careful targeting of the approach.

Mr. Mestres passed casually over some matters that seem important in the light of the intent of this book. We have taken the liberty of italicizing certain of these throwaway lines to make sure they are not missed. No such emphasis is to be found in the original. In an oral presentation, obviously, stress and even irony can be conveyed by means that are lost in print.

Mr. Chairman, Gentlemen of the Commission. My name is Ricardo A. Mestres. I am the financial vice-president and treasurer of Princeton University.

At the outset let me say how much we appreciate the opportunity to appear before the Tax Exempt Property Study Commission. In the long history and tradition of educational institutions in our nation, tax exemption has helped them greatly to develop and carry forward their two-fold mission of educating young people and advancing knowledge. *It is important, nevertheless, that matters of this nature be examined periodically by representatives of the public*, and we welcome the chance to testify before the commission.

Basic to the problem under consideration is the tax system that obtains in the state, which places the major burden for municipal costs on real-estate taxes. I suggest that this subject should not be outside the purview of the investigations of this commission.

Related to the tax question on local municipalities is the true impact of a tax-exempt educational institution like Princeton. Are the costs of unreimbursed services and the loss of potential ratables offset by other credits?

I might illustrate this point by the water that surrounds New York City. Clearly, these waters do not pay taxes, but no one would argue that they are not of tremendous economic benefit to the city. Similarly, the

Atlantic Ocean, which borders a substantial part of the boundaries of this state, pays no taxes, but it is one of the most important economic benefits of this state.

It is in this context that educational institutions, whether public or independent, must be considered. What are the debits and credits, both tangible and intangible, to the state and to the community of the presence of an educational institution?

I believe I can demonstrate that Princeton University, in pursuing its primary aims of educating young people and extending the boundaries of existing knowledge, serves the community and state that have been its home for over two centuries and justifies the tax exemption accorded to it under the New Jersey constitution.

Princeton University is the principal landholder of both taxable and tax-exempt property in Princeton Borough and Township. Out of each dollar collected in real-estate taxes, fifty cents go for school costs. It is significant that, in spite of the fact that the Princeton Regional School District costs per pupil are among the highest (ninety-fifth percentile) in New Jersey, the actual taxes paid on a \$30,000 house in both the borough and the township are less than the taxes paid on a \$30,000 house in the surrounding municipalities of Hopewell Borough, Pennington Borough, or Lawrence Township. In considering this fact, one must recognize that a house in

Princeton which is similar in structure and style to one in another community will usually cost more. This, however, raises the important question, What is the reason for the township and borough of Princeton's continuing attractiveness to homeowners?

It is the presence of Princeton University that has influenced over 100 research and development organizations to locate in the area, beginning in 1935 with the Gallup Poll and in 1942 with RCA. A scan of the new telephone book reveals that the greater Princeton area lists twenty-nine architects, eleven accountants, eighty doctors of medicine, fifty-seven lawyers, thirty-two dentists—and twenty-one real-estate, sixteen consulting engineering, fifteen insurance, and thirteen marketing research firms as well. Since World War II Princeton has been a magnet in attracting individuals and companies to this area.

Why can one get \$6 per square foot for commercial rental of modern, up-to-date office space in the heart of Princeton? This is 13%–20% more on the average than prime space in Trenton or Newark, the capital and fiscal center of the state, respectively.

The economic facts bearing on Princeton University's relation to its community deserve review. Taxes have long been referred to as one of life's two certain propositions. Despite its "tax-exempt" status, *the university is Princeton's biggest taxpayer*, paying 9.5% of the borough assessment and 7.7% of the township assessment. This comes to three-quarters of a million dollars (circa \$759,000)¹ for the current academic year, which is *equivalent to almost half our projected operating deficit*. Except for academic buildings, dormitories, dining halls and the gymnasias, the university pays full taxes on all its properties—including faculty housing, the playing fields, Baker Rink, McCarter Theatre, Palmer Stadium, Lake Carnegie, and some 5,187 off-street parking spaces. We know of no other university in the country (except Rutgers) that pays taxes on its stadium, and we are one of the institutions in the state that is required to pay taxes on its faculty housing.

At this point, it is worth noting that the privately owned student eating clubs on Prospect Street paid \$67,826 in taxes in 1968, over 44 percent of which is used for the borough school budget. *No children are sent to school from the clubs, to the best of my knowledge.*

The commission has expressed an interest in any special fiscal arrangements that a "tax-exempt" institution may have with a municipality. In 1968, the university made an outright donation of \$15,000 to the Princeton Borough general budget, as well as a \$700 donation to the Board of Health. These contributions originated prior to the 1930s, but we are unable to determine the basis for their origin. In addition, we estimate that the university owes Princeton Township \$24,140 as of 1968 on

top of the normal real-estate taxes to meet the full cost of educating each school-age child living in university apartments. The agreement to meet full school costs was negotiated in 1960 to obtain a permit to construct housing for our junior faculty. (Quite frankly, we have contended from the outset that the use of a zoning regulation for the purpose of raising revenue is unconstitutional.)

The university maintains its own properties, tax exempt or not; pays for campus police and proctors (our basic costs for security exceed the police budgets of the borough and township combined); builds and repairs its own roads and parking areas (cost of maintenance of roads owned by the university and used by the general public in borough and township is pegged at \$24,660 per annum); spends \$4,980 for fire hydrant rental and street lights, which is consequently a saving to the municipalities; and shares the costs (\$57,259 in 1968) of the incinerator and Joint Sewer Operating Committee with the two municipalities.

Because of both its size and the value of its economic stability, possibly the most significant figure is *the university's payroll for the current year: \$34,421,000, excluding benefits*. Most of this payroll is spent in the community and in the state. At present, the university employs 3,690 persons, of whom 1,235 are members of the faculty or research and technical staffs. Almost half (43%) of the total live, spend, and pay taxes or rent in Princeton Borough or Township. Meanwhile, we estimate that *our 3,260 undergraduates spent at least \$2.6 million in town last year, and almost half as many graduate students (half are married) spent an additional \$2.9 million.*

In the 1960s, Princeton University spent \$83.2 million in new construction to support more adequately the academic program and be more responsive to the growing demands of basic research. As a consequence, during the past eight years this sum went to contractors who, if not local themselves, hired many union subcontractors in the local region. Let me add that every time we build anything, we must obtain a building permit from the municipality. The cost is not inconsiderable. A recent permit cost \$11,500, and the engineering quadrangle permit was \$24,600.

In addition to \$83 million for new construction, in the 1960s the university expended \$14.5 million on major maintenance and renovation of the existing plant. Virtually all of this work was contracted out because it could not be handled by our own crews. Similarly, *a large quantity of the university's regular annual purchases of about \$15 million in services, goods, and equipment is bought directly in Princeton*. It is our practice to buy in the area, and we have been able to identify \$6.5 million as spent in New Jersey last year, of which \$1.9 million was spent in the immediate Princeton area. The very

1. \$23,000 goes to adjacent municipalities.

substantial revenues flowing to the community as a direct result of the university's presence and purposes are not usually recognized.

Although certainly no less important, the cultural benefits of Princeton University to the community and state are less easy to assess than the fiscal. To illustrate, turn first to the Firestone Library, the Art Museum, and McCarter Theatre. Because of their strength, scope, and influence, each of these "institutions within an institution" is without a superior in New Jersey. Each provides a set of cultural, scholarly, and educational services to citizens, groups, and other institutions in New Jersey that could not easily be duplicated.

Since Chancellor Green Library was erected in 1873, and even before that date, Princeton's library has been of use to individuals and organizations in the state. Upon completion in 1948, the Firestone Library was already performing a much larger function than serving our faculty and students. Today, the collections number more than two million volumes. We recognize the public responsibility that goes with this priceless resource. Princeton's library is a research center for New Jersey—along with Rutgers, Newark Public Library, and the New Jersey State Library.

Within the Princeton area, fifty-eight corporations for a nominal fee have obtained library cards for members of their staffs. Included are such companies as RCA, American Cyanamid, FMC Corporation, Western Electric, Cities Service, Continental Oil, Mathematica, Ingersoll-Rand, Opinion Research, and Mettler Instrument Company. *These industrial organizations make substantial use of the university's collections*, particularly in science, technology, economics, mathematics, and political science.

We also provide cards without charge to staff members of various local, state, and federal governmental agencies, including at least a dozen divisions of the state of New Jersey, the U. S. Geological Survey in Trenton, the Naval Air Turbine Test Station, and many units of Princeton Borough and Township. Currently, over thirty such organizations have had 180 cards issued to them. The New Jersey Neuro-Psychiatric Institute in Skilman alone has 32 cards.

Registered individual borrowers now exceed 700. When added to the corporate total of 315, more than 1,000 cards have been issued to nonuniversity users in the Princeton area.

Ever since its beginning in the 1880s, Princeton's Art Museum has served as an educational and research laboratory for our staff and students and a place for the edification and enjoyment of the public. With the opening of the new building in 1966 both functions have expanded. The development has been startlingly rapid, however, in the area of service to the general public.

Without charge, the Art Museum provides trained guides to lecture to groups on the collections. In addition

to visits by the Princeton Regional Schools, the museum is visited regularly and repeatedly by school groups from other parts of the state, Pennsylvania, and New York.

Besides serving the educational purposes of the university, the Art Museum is accessible to students from other New Jersey institutions of higher learning, e.g., Rutgers—The State University, Fairleigh Dickinson University, and Trenton State College. All of these institutions use the collections extensively. While no tally is kept of the number of scholars who use the museum, it may be significant that *the 100,000th visitor to the museum last fall since its reopening in 1966* in new quarters was a student from Rider College. He was a resident of Ho-Ho-Kus, who came to fulfill a class assignment.

Princeton's Art Museum is the only institution in the state that presents a full range of works of art to the public. Visitors are offered an insight into the ancient civilizations through works of art from Egypt, Greece, and Rome; they can see the flowering of religious art of the Middle Ages and of the humanistic-artistic achievements of the Renaissance. Nowhere in the state is there on public exhibition such a widely encompassing collection of art from Europe, Asia, and America.

There are several points I would like to stress about *McCarter Theatre*, on which we pay taxes and on which the university is sustaining a substantial operating deficit. For example, in the eight years since McCarter Theatre was incorporated in 1960, the professional resident company offered seventy-six productions which played 819 performances to 512,000 people. Of these, 444 performances were matinees attended by 303,635 students (roughly 60 percent of the total attendance) from approximately 350 New Jersey high schools. This figure does not include some 12,800 teachers who came with their students.

Besides McCarter's program of drama, dance, music, musical comedy, children's theater, movies, and lectures relating to the performing arts, as part of McCarter's extension services, members of the McCarter staff in a single season complete from 125 to 150 speaking engagements without charge to schools, theater clubs, and cultural organizations throughout the state.

The professional resident drama program has gained quite a place in New Jersey in eight years, but it is problematical whether the university can continue to subsidize this Center for the Performing Arts indefinitely because of our difficult financial situation.

The university leases Bainbridge House (with a rental value of \$11,200) for \$1 a year to the Princeton Historical Society. The society has over 1,000 members and uses the house (which is open to the public seven days a week) for library, historical, and exhibition purposes. Prior to this use, it served as the community library for half a century, again at a cost to the community of \$1 a year rent.

The faculty makes a major contribution to adult education locally. On campus, the university offers a rich fare of lectures and seminars in the afternoon and evening throughout the academic year. Last year 976 lectures and seminars were open to the public. One index of interest in these events is that 1,610 persons who are not connected with the university subscribe to the *Weekly Bulletin*, the calendar of events.

On the average, 1,000 visitors to the university take a tour of the campus conducted by the (student) Orange Key Guide Service every month. In addition, *the university attracts tens of thousands of visitors each year for athletic events, conferences, house parties, reunions, commencement, and sightseeing.* Their local spending would be difficult to calculate, but it is certainly in the millions of dollars.

The university's athletic facilities—Palmer Stadium, Baker Rink, Dillon Gym and Pool, tennis courts, boat-house, Lake Carnegie, and playing fields—were used during the past year by sundry groups including the YMCA, the Jaycees, the American Legion, Boys Clubs, Princeton High School, Rutgers, Boy Scouts, New Jersey Interscholastic High School teams (for championship tournaments in swimming, basketball, tennis, and soccer), New Jersey Little League, and the Princeton Hospital. Incidentally, we pay "extra" for police assistance at large sporting events, and that cost us \$6,000 last year.

Princeton Township provides some open space and woodland to the public, but many of the green acres in the area belong to the university. Lake Carnegie and its surroundings are, in effect, a beautiful park. Currently, *the land and water (and, in winter, the ice) are used as much by the public at large as for university purposes—and are taxed.* Silting in the lake, which encompasses 260 acres, has become a severe problem, one that has been under study for two years. The estimated cost of dredging—figured at about \$1.0 to \$1.5 million, depending upon the scope of the job—is presently beyond our capacity. Andrew Carnegie did not endow the upkeep of the lake!

One area that I have not touched on heretofore is the university's Computer Center. *In 1948, the first computer was designed and built in Princeton by John van Neumann,* and twenty-one years later the computer has not only come of age but also become indispensable to the operation of government, industry, and educational institutions. With the addition this year of an IBM 360/91

computer, Princeton will have the single most powerful computer in the state. This is significant because discussions with Rutgers and the New Jersey Commission of Higher Education are currently in progress regarding the creation of a Regional Computer Center which would serve many institutions in New Jersey. Thus, the university's capability has been achieved by a substantial commitment of its funds and effort over many years, and it will be of significance far into the future.

In the people-to-people domain, the members of the university make many contributions. I shall not enumerate here these personal contributions, but I shall mention President Goheen's service as chairman of the Citizens Committee for Higher Education in New Jersey, and that in the past three years nineteen members of our faculty—many of whom are associated with the Woodrow Wilson School of Public and International Affairs—have served on task forces, commissions, and committees for the State of New Jersey. Also, I wish to note the civic interest behind our students' involvement in the Winter-in-the-Cities program; Blairstown Summer Camp; the Student Volunteers Council work in Trenton, Jamesburg, Skillman, and Farmingdale; the Princeton Youth Center; and the American Field Service.

I have tried to set forth data to justify Princeton University's tax-exempt status. Studies such as Seymour Harris's classic analysis, *Higher Education: Resources and Finance* (McGraw-Hill, 1962), and the Heller report of 1968 give New Jersey disturbingly low ratings in the fulfillment of its responsibilities to higher education. Princeton, and indeed all independent institutions of higher education, fulfills many of the roles that we expect of a public institution—and presently at little cost to the state.

Contrary to the belief of most, I can attest to the fact that Princeton's resources are far from adequate. Our operating deficit for the current year is estimated at \$1.7 million. Without tax exemption, we could not function except at the cost of a drastic curtailment of the scope and quality of education and research.

As one of the leading universities of the nation, Princeton's outreach and influence is national, indeed global, in character. As I have tried to suggest, the university is not only an extraordinary cultural benefit, it is also a solid economic boon to its community and state.

Thank you for an opportunity to meet with the commission. If I can, I would be pleased to answer questions.

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